



Additional chart coverage may be found in CATP2, Catalog of Nautical Charts.

SECTOR 8 — CHART INFORMATION

SECTOR 8

SELAT BANGKA TO SINGAPORE STRAIT VIA OUTER AND INNER ROUTES

Plan.—This sector is described as follows: Selat Bangka (Banka Strait) to Singapore Strait by the Outer Route and by Selat Riau (Riouw Strait) the Inner Route; also Selat Bangka to Singapore Strait by Selat Berhala (Berhala Strait) and Selat Durian (Doerian Strait), the Alternate Inner Route.

General Remarks

8.1 Vessels bound from Selat Bangka to Singapore now seldom use the outer route to the E of Kepulauan Lingga (Lingga Archipelago) and Kepulauan Riau (Riouw Archipelago). Most vessels prefer to proceed by Selat Riau or Selat Berhala.

Selat Berhala and Selat Durian, its continuation N, form the inner and alternative route to Selat Riau when bound to Singapore from S. Its fairway is deep throughout, the least water, of 10.1 to 11.9m, lying SW of **Pulau Mutyi** (Moetji) (0°30'S., 104°00'E.), about 30 miles NW of Pulau Berhala. Since it has been marked with lights and buoyed, this channel is equally available for all classes of vessels.

Selat Berhala forms the S part of this route and Selat Durian the N part. The intermediate portion has not received a specific denomination.

The entire route is about 120 miles long from **Pulau Berhala** (0°52'S., 104°24'E.) to the **Karimun** (Karimon) **Islands** (1°05'N., 103°30'E.) in the Singapore Strait. It is bound on the W side by the coast of Sumatera (Sumatra), **Pulau Sanglang Besar** (Sanglang-besar) (False Doerian) (0°37'S., 103°41'E.), and the contiguous islands, and on the E side by Pulau Singkep (0°30'S., 104°30'E.) and other islands of the S and W coast of **Pulau Lingga** (0°10'S., 103°35'E.), and by **Pulau Durian-kecil** (Little Durian) (Little Doerian) (0°44'N., 103°40'E.) and **Pulau Durian** (Great Durian) (Doerian) (0°44'N., 103°43'E.) and the adjacent islands.

Tides—Currents.—Between the N end of Selat Bangka, Kepulauan Riau, Kepulauan Lingga, and Singapore, the average rate of the tidal currents in the S monsoon is greater than in the N monsoon on account of the prevalent winds from that direction; nevertheless, in the later monsoon greater rates have been observed than in the former.

The greatest rate observed in the N monsoon was 2 knots and in the S monsoon 1.25 knots, whereas the average rates, on the contrary, were only 0.5 and 0.75 knot, respectively.

North to Singapore Strait from Selat Bangka—Outer Route

8.2 The coast of Sumatera (Sumatra) from **Batakarang Point** (2°00'S., 104°45'E.), trends NNW for about 65 miles to **Tanjung Jabung** (Djaboong) (1°00'S., 104°22'E.).

The entire coast is very low, covered with wood, and fronted by a mud bank that, within a depth of 9.1m, in places, extends about 13 miles offshore.

It may be approached to a depth of 9.1m, except off Tanjung Jabung, where the 10m curve is barely 1 mile offshore, with less than 3.7m close to its edge.

Vessels bound for Selat Berhala, when approaching Tanjung Jabung should keep about 8 miles offshore until it bears 270°.

Tanjung Batakarang was reported to have extended nearly 1 mile E of its charted position.

Pulau-pulau Tuju (Tudju Eilanden) (1°10'S., 105°18'E.) lie in the NE approach to Selat Bangka, in a position about 20 miles from the N coast of Bangka. These islands are generally visible at a distance of about 25 miles and are surrounded by reefs. Many shoals in the area are not marked by discoloration.

Pulau Saya (0°47'S., 104°56'E.), situated about 30 miles NW of Pulau-pulau Tuju, is steep-to, of granite formation, covered with wood, and has a double-peaked 210m high summit; the N peak is about 18.3m less in elevation than the S one, and both peaks are in range on a 180° and opposite bearing. A small village is situated on the NW side of the island.

Nyamuk (0°48'S., 104°56'E.) is the N of two steep granite rocks lying 0.75 mile N of Pulau Saya. A rock, awash at LW, lies between the islets.

Caution.—Less water than charted has been reported (1995) about 7 miles SSW of Pulau Saya.

8.3 Pulau Singkep (0°30'S., 104°30'E.) is situated about 20 miles N of Tanjung Jabung on the Sumatera coast.

North of Pulau Singkep is Pulau Lingga, with **Pulau Selayar** (0°18'S., 104°26'E.) in the channel between.

Off the W end of Pulau Singkep is a group of islands separated from Pulau Singkep by **Selat Sebayur** (0°25'S., 104°15'E.).

Pulau Singkep, about 20 miles in length and the same in breadth, is much indented on its N and S sides.

From **Tanjung Malang** (Perpat) (0°39'S., 104°30'E.), the SE point of Pulau Singkep, the coast has a NE direction for 10 miles to **Tanjung Tengku** (0°30'S., 104°35'E.), with Tanjung Tija (Tidja) (0°28'S., 104°36'E.) about 2 miles farther N.

The coast between these two points is fairly thickly populated; the most important village is **Dabo** (Kotadabok) (0°30'S., 104°34'E.).

Pulau Lingga (0°10'S., 104°35'E.), lying about 4 miles N of Pulau Singkep, is about 35 miles long, in a NW and SE direction; it largely consists of alluvial flats.

8.4 Kotadaik (0°14'S., 104°38'E.), the principal village, is situated on the W side of a shallow bay on the S coast of the island.

Tanjung Goroh (0°20'S., 104°55'E.), the SE point of Pulau Lingga, may be known by a saddle hill. Between Tanjung Goroh and **Tanjung Jang** (Djang) (0°18'S., 105°00'E.) is a shallow bight named **Tolo Bay** (0°18'S., 104°57'E.).

On the W side of the entrance is **Pulau Kokau** (0°20'S., 104°56'E.), a small hilly islet; 0.3 mile to the S of the islet is **Batu Maresoh** (0°19'S., 104°56'E.), a rock just above HW.

Pulau Sunsa (0°19'S., 105°00'E.), about 0.5 mile S of Tanjung Jang, has a hill 99m high; a small wooded rock lies close W, and 0.7 mile WSW of the islet there is a rock awash at LW. A rock, with a depth of 2m, lies about 0.5 mile SE of Pulau Sunsa. The outer end of the coastal reef on the W side of Pulau Sunsa is located 1.4 miles from Tanjung Jang Light.

Pulau Merati (0°18'S., 105°01'E.), lying 1.5 miles E of Tanjung Jang Light, is surrounded by a reef; nearly midway between it and Tanjung Jang is a rock above-water.

The NE coast of Pulau Lingga is formed of numerous hillocks, from 61 to 91m high, which gives it a uniform appearance, but neither it nor the adjacent islets are safe to approach at night. The hills near the N end of the island are 202m and 226m high.

8.5 Pulau Selentang (0°07'S., 105°00'E.), called "Pulo Semat" by the natives, is a sandy islet 24m high and covered with high trees. Pulau Selentang lies about 11 miles N of Tanjung Jang.

It is surrounded by a reef which extends as much as 0.75 mile from its N side. Two rocks, with depths of 1.2 and 2.7m, lie, respectively, about 0.3 mile and 183m S of the islet.

Pulau Bujang (0°08'S., 104°55'E.), about 5 miles W of Pulau Selentang, is hilly and wooded, with a peaked hill 111m high near its center; it is steep-to on the NE side but elsewhere is surrounded by a reef which dries. On the SE side, are two wooded rocks.

Bulu (0°08'S., 104°55'E.) is a small village situated on a bight on the SE side. Between the island and the coast the depths are from 10.1 to 12.8m.

Tjawan Reef (0°07'S., 104°53'E.), which dries, lies about 0.5 mile NW of Pulau Bujang.

Pulau Gojong (0°11'S., 104°54'E.), lying between Pulau Bujang and **Tanjung Liang** (0°12'S., 104°53'E.), is low and wooded, it is surrounded except on its SW side, by a reef that dries and extends for a distance of 0.4 mile.

Pulau Malangbilang (Malang Bilang) (0°11'S., 104°55'E.), a rock 4.3m high, and **Pasir Pandjang** (0°10'S., 104°55'E.), a sandbank which dries, lie about 1 mile SE and NE, respectively, of Pulau Gojong.

Pulau Kongka-besar (Kongka Besar) (0°03'S., 104°51'E.) lies about 4 miles NW of Pulau Bujang and is hilly throughout its length, with some remarkable peaks; the E coast is rocky and steep-to. A drying rock lies about 2 miles W of the NW point of the island.

Maras Rocks (0°05'S., 104°53'E.), two wooded rocks, lie about 1 mile SE of Pulau Kongka-besar, with a narrow channel between and a depth of 11m. Midway between Maras Rocks and Tjawan Reef, to the SE, there is a reef with rocks above HW.

8.6 Kongka Kecil (Ketjil) (0°04'S., 104°50'E.), 116m high, close W of Pulau Kongka-besar, is separated from it by a narrow channel, with depths of 4.6m and used by small vessels; a village is located on its E side.

Two detached reefs lie SE of Kongka Kecil; on the N one is **Penoh Island** (0°05'S., 104°51'E.), and on the S there are rocks above-water which lie within the 10m curve around the larger islands. About 1 mile SSW from Kongka Kecil is **Penoh Laoet** (0°05'S., 104°50'E.), on the S end of a reef.

For other islets, depths, and dangers between Kongka Kecil and the NE coast of Pulau Lingga, the appropriate chart is the best guide.

Blading (0°01'S., 104°50'E.) is the largest of a group of islets and rocks of which are lying about 2 miles N of Pulau Kongka-besar. Reefs with rocks above-water extend about 1 mile NW.

Krokodil (0°00'N., 104°53'E.), about 4.6m high lies 3.5 miles Blading Island, with a reef 0.3 mile W. Depths of 5.9 to 8.7m lie between it and Pulau Kentar to the WNW.

Pulau Kentar (0°02'N., 104°46'E.), situated 1.5 miles E of Tanjung Gantong, the SE point of Pulau Sebangka, is hilly, the highest point near its SE point being 120m high.

When coming from the N and before the adjacent islands to the S are visible, this high point resembles the hill on the SE end of Pulau Lingga. From the S side of the island, a bank, with less than 5.5m of water, extends about 1 mile.

Nearly a mile beyond a narrow reef stretches 2.5 miles in an E and W direction, with a least depth of 3m, and W of this there is a sandbank nearly always dry.

Between the E end of the narrow bank and the bank extending from Pulau Kentar there is a small reef with a rock above-water named **Anak Langoe** (0°01'N., 104°47'E.).

8.7 Bakau (0°05'N., 104°45'E.), lying about 1 mile N of Pulau Kentar, is surrounded by a reef; Tjandur and **Beringin** (0°06'N., 104°44'E.), two small islets, are situated on the reef about 1 mile N of Bakau.

Kapas (0°08'N., 104°42'E.), a rock 0.6m high on the N end of the reef, lies nearly 3.5 miles NW of Bakau.

Pulau Sebangka (0°08'N., 104°35'E.) lies between Pulau Lingga and Pulau Temiang to the NW. It is 19 miles long between **Tanjung Gantong** (0°01'N., 104°42'E.), its SE end, and **Oetan Besar** (0°15'N., 104°29'E.), its NW end, with a maximum breadth of about 3 miles.

Reefs, dry at LW, front the N side of Tanjung Gantong; they are visible from the discoloration of the water.

Alut (0°04'S., 104°42'E.), 156m high, lies about 4 miles S of Sebangka.

Teluk Limbung (Limboeng Bay) (0°10'S., 104°47'E.), a shallow bay, indents the E coast of Pulau Lingga W of **Tanjung Takih** (0°08'S., 104°50'E.); it is only available for small craft.

Numerous islands and shoals, which can best be seen on the chart, lie between the NE coasts of Pulau Lingga and Bakung (Bakong) Islands and Pulau Sebangka to the NE.

8.8 Pulau Mesanak (0°25'N., 104°31'E.), located 7 miles N of the N end of Pulau Sebangka, has the form of an elbow, of which the long arm extends 4.5 miles in a N and S direction, and the short arm 3 miles E and W. Ridges of hills extend the whole length of both arms, the highest point, 107m high, being where the arms meet.

On the E side of Pulau Mesanak the coastal reef extends for a distance of 0.7 mile; close to the rocky E point, and connected to it, is **Koejoe Island** (0°24'N., 104°34'E.) small but moderately high.

Two rocks which cover at HW lie nearly 0.5 mile off the N side of the island and about 1 mile E of **Observation Point** (0°26'N., 104°31'E.), the NW extremity of the island.

Patches of 6.9m lies about 0.1 mile NW of the rocks mentioned above and about 0.2 mile N of Observation Point.

West of the island foul ground extends W of Merodong Island and other islands.

Pulau Nyamok (Njamok) (0°20'N., 104°33'E.), 56m high, and lying about 2 miles SE of the S end of Pulau Mesanak, is surrounded by a reef which extends about a mile NE, with drying rocks, and it is generally breaking.

In the channel between Pulau Nyamok and Pulau Mesanak, there is a sandy islet with some trees; the channel is apparently choked with rocks.

The Merodong group of islands lie to the W of Pulau Mesanak, between it and the Temiang group. The former group comprise six islands, separated by channels unsuitable for navigation and there is no reason in venturing among them or between them and Pulau Mesanak.

Merodong (0°24'N., 104°27'E.), the N island, is 186m high and its conical peak is one of the principal landmarks for making Selat Riau (Riouw Strait). Rocks, dry at LW, extend 0.8 mile NNE from the NW end of Merodong, on the S side of Selat Merodong (Selat Merodong).

Numerous islands and dangers extend for a distance of 20 miles off the E coast of **Pulau Bintan** (1°00'N., 104°34'E.).

Vessels making the passage between Selat Bangka and Singapore Strait should generally pass outside, or to the E, of the whole of these islands and dangers. The whole coast and the islands off it are, as a rule, fringed by coral.

8.9 Selat Kijang (Kidjang Strait) (0°50'N., 104°37'E.) is a narrow passage between the SE coast of Pulau Bintan and several small islands immediately off that coast.

Tanjung Tili (0°49'N., 104°36'E.), the S extremity of Pulau Bintan, marks the W side of the S entrance of Kijang Strait.

The distance from Tanjung Tili to the N entrance of Selat Kijang is about 8 miles. The N part of the strait is unmarked and used only by small vessels with local knowledge.

The S part is suitable for use by vessels inbound for Sungei Kolar, a port located on the W side of the strait about 3 miles NNE of Tanjung Tili.

A bar, with depths of 5.6m extends across the S entrance to Selat Kijang from Tanjung Tili to the SW extremity of Pulau Koyang. A lighted buoy is moored 0.6 mile ENE of Tanjung Tili.

Range lights are shown 1.25 miles SSW of Tanjung Tili. The front light stands close off Tanjung Muga, the NW extremity of Pulau Siulung; the rear light stands on the N coast of Pulau Mantang, 700m from the front. The entrance channel is marked by buoys.

An overhead cable, with a clearance of 45m, crosses the channel about 0.2 mile S of the berth at Sungei Kolar.

Vessels leaving Sungei Kolar pass N of Pulau Mana, a small island in the middle of Selat Kijang about 0.5 mile NNE of Sungei Kolar, then E and S through **Selat Dendang** (0°51'36"N., 104°37'18"E.) and S and SW through **Selat Kelong** (0°49'N., 104°38'E.).

These channels are marked by buoys and beacons. It is reported that ships drawing 8.7m have cleared Sungei Kolar via these channels.

A channel, which is marked by beacons, leads into Selat Kijang from SE of **Pulau Kelong** (0°50'N., 104°39'E.). It passes N of two drying reefs lying a little less than 0.5 mile N and NW of **Pulau Kambat** (0°48'N., 104°40'E.), an islet located about 1 mile SE of Pulau Kelong.

A beacon marks the NW drying reef. From there, it passes N of **Pulau Rusa Besar** (0°47'30"N., 104°38'30"E.). An 8.2m shoal lies in mid-channel about 0.3 mile WSW of the SW point of Pulau Kelong. Caution is advised in the navigation of this channel, as it has not been thoroughly examined in recent years. A buoy is moored about 0.3 mile NNE of **Pulau Rusa Kechil** (0°47'30"N., 104°38'54"E.).

A swept channel from Selat Kijang, dragged to a least depth of 12.8m, leads E and then N to a position NE of **Pulau Mapur** (1°00'N., 104°49'E.).

From a position about 0.5 mile NW of Pulau Kambat, proceed ENE for 4 miles until **Pulau Borus** (Boroos) (0°48'N., 104°45'E.) bears 150°. Then steer E for 7 miles until **Pulau Merapas** (0°56'N., 104°55'E.) bears 038°.

Then steer NNE until Pulau Marapas bears 112°. From there the swept channel leads to the N for about 8 miles to its seaward end.

8.10 Kijang (0°51'N., 104°36'E.) (World Port Index No. 50045), a bauxite port, is located about 3 miles N of the S entrance of Selat Kijang.

There is no concrete quay; ships moor alongside dolphins and two jetties. Vessels up to 180m long, with a maximum beam of 27m and a maximum draft of 10m, can be accommodated. There are tidal currents of up to 6 knots at the berth. Numerous wrecks lie stranded on the foreshore within 0.5 mile N and S of the jetties.

Pulau Gin Besar, Pulau Gin-kecil, and **Pulau Numbing** (Noembing) (0°45'N., 104°44'E.) are three islands, which are together about 5 miles in extent, lying from 8 to 13 miles SE of **Gunung Kaus** (0°52'N., 104°35'E.), and separated from each other by narrow channels; the channel along the S side of Pulau Gin Besar has depths of 6.9 to 15.5m but its entrances are foul.

Selat Sendara (0°44'N., 104°40'E.) is the channel between Pulau Gin Besar and Pulau Gin-kecil on the E and Pulau Telan on the W. In it are some banks with less than 3.7m, and off the coast reef of Pulau Telan are some drying patches.

At its N end off Pulau Gin Besar is **Pulau Rinti** (Rienti) (0°45'N., 104°40'E.), with a small islet N of it, both surrounded by reef.

These obstructions and tidal currents combine to make the passage unsafe except to those acquainted with it.

Pulau Teroti (0°42'N., 104°47'E.), the S of a cluster of islets lying to the SE of Pulau Numbing, is 34m high and 2.25 miles SE of Pulau Numbing.

Pulau Rusah (Roesah) (0°42'N., 104°45'E.), composed of two rocks on a small drying reef, lies about 2 miles W of Pulau Teroti, and there are several rocks above and below- water between these islets and rocks.

Pulau Beruan (Beroean) (0°46'N., 104°49'E.) lies 5.5 miles NNE of Pulau Teroti, and being 90m high and saddle-shaped, is conspicuous and easily recognized.

Pulau Merapas (0°56'N., 104°55'E.) is the outer and E island off the E side of Pulau Bintan. It is 63m high, covered with trees, and is steep-to 0.3 mile offshore.

Pulau Mapor (Pulau Mapur) (1°00'N., 104°49'E.) lies with its S extremity about 10 miles N of Pulau Beruan. A prominent 107m high hill stands on the NW point of the island.

Pulau Sentut (Sentoet) (1°03'N., 104°50'E.), 44m high and of sugar-loaf form, lies about 2 miles NW of the NE end of Pulau Mapor. It is steep-to on the N side, but a reef extends about 0.5 mile from its S end.

Pulau Berlangkap (1°06'N., 104°40'E.) is an islet 27m high, lying about 9 miles NW of the NW end of Pulau Mapor and nearly 2 miles off Tanjung Berlangkap (1°06'N., 104°38'E.).

8.11 From Tanjung Berlangkap to **Tanjung Berakit** (1°14'N., 104°34'E.), about 8 miles N, the NE coast of Pulau Bintan forms a bay indented with bights and coves. The coast of this part of Pulau Bintan is for the most part fronted by a reef which projects in some places to a distance of 0.5 mile; just N of Tanjung Berlangkap is a ledge of rocks.

Tides—Currents.—The tides at **Tanjung Boetoen** (0°15'S., 104°36'E.), within the islets, are reported to be diurnal and subject to irregularities.

Springs occur about 3 days after the moon's greatest declination, with a rise of 2.1m; neaps occur at a similar period after the moon has no declination, with a rise of 0.3m.

During the second half of June and December springs rise 2.6m and neaps rise 0.8m; about the same time in March and September springs rise 1.7m, with no perceptible rise at neaps.

The flood current at Tanjung Boetoen runs to the W at a velocity of 2 knots.

The flood current runs in a NNW direction, parallel to Pulau Lingga, Pulau Sebangka, and the other islands, entering the channels between those islands and continuing N.

Off Selat Riau it meets the flood current which comes S along the E coast of Pulau Bintan and enters the strait.

This flood current passes through Temiang, Merodong, Dempo, and Abang Straits. Westward of these straits the flood current takes a general SSE direction, or in the opposite direction to the flood currents E of Lingga, passing S through Chempa Strait and along the W coast of Lingga. About 10 miles W of these islands there is not much current.

The flood currents through Temiang, Merodong, and Pangelap Straits meet off Kebat, at the NW end of Temiang, and cause heavy tide rips and eddies in that locality at certain times which it is dangerous to pass through.

The flood current also passes N between Mesanak and **Doejoeng** (0°21'N., 104°28'E.), joining that coming W through Merodong Strait.

The flood current sets NNW between Sebangka and Pulau Bakung (Bakong), and also passes W through Selat Dasi (Dasi Strait), and at times can attain a velocity of 4 knots in that strait.

The ebb current through all the channels of straits referred to runs in the opposite direction to that given above, except where two or more currents meet or divide, when the general direction may differ.

In the very narrow channels, which are of no consequence to navigation, the currents often attain a rate of 3 to 4 knots, but in the wider channels they do not exceed 2 to 2.5 knots.

Off Pulau Bintan at the change of the monsoon in April, the flood current runs S for 18 hours, while the ebb runs N for 6 hours. In June the periods are reversed, consequently a current against the SW monsoon will only take place a few hours each day.

During the shifting months of the monsoons the tidal currents are regular, but during their strength the surface current will be always more or less governed by the wind.

The flood current comes from the N, and runs nearly parallel to the E coast of Pulau Bintan, along its S side toward Abang Strait, and to the N in Selat Riau, meeting another flood current from Singapore Strait, near the town of Rhio.

The flood sets to the S along the E coast of Pulau Lingga, and close to Tanjung Jang, its SE end, then it runs W to Selat Penuba (Penoeba), and obliquely across Lingga Bay to Selat Berhala. From Tanjung Jang to Pulau Saya and onward to Selat Bangka its direction is nearly S; another current from about 2 miles S of Pulau Saya sets toward Selat Berhala.

The ebb current is reported to set in the opposite or N direction.

Gosong Castor (Castor Bank) (0°40'S., 105°03'E.) is a ridge with a hard sandy bottom lying with its S end about 6 miles ENE of Pulau Saya. A post stands 1.5 miles E of the N extremity of Gosong Castor. It has a least depth of 10.7m, and from 20 to 27m around it.

The bank is 10.5 miles long in a NE and SW direction, and 0.25 to 0.5 mile in width within a depth of 18.3m, except at the S end, where it widens to about 3 miles. The bank is famous for a species of red fish, named "Ikan Merah", from their color.

Caution.—A dangerous wreck, the position of which is approximate, lies sunk about 19 miles off the coast in a position about 40 miles N of **Batakarang Point** (2°00'S., 104°45'E.).

Wrecks lie 15.5 miles S and 6 miles ESE of **Pulau Saya** (0°47'S., 104°56'E.).

A wreck lies 2.5 miles SSW of **Pulau Berhala** (0°52'S., 104°21'E.).

8.12 Cowmans Bank (0°38'S., 104°56'E.) lies about 6 miles W of Gosong Castor and parallel to it. It is a narrow bank of hard sand and shells, with mud scattered here and there. It is 10 miles long and has a width of 0.25 to 0.75 mile within the 20m curve and is steep-to; the least depth is 10.7m near its center.

Karang Alangkalam (Ilchester Bank), (0°27'S., 104°58'E.) is 6 miles in length within the 20m curve, beyond which it is steep-to. The shallowest spot, 2.3m near its center, lies nearly 9 miles SSW of **Tanjung Jang** (Djang) (0°18'S., 105°00'E.) Lighthouse.

A narrow bank, 4 miles in length, lies S of Karang Alangkalam; its shallowest spot of 8.8m lies about 12.7 miles SSW of Tanjung Jang Lighthouse.

Tanjung Jang Light is obscured over this bank and over the W portion of Karang Alangkalam.

Kepulauan Singkeplaut (Singkep Laoet Islands) (0°42'S., 104°28'E.) lies SW of Tanjung Malang (Tanjung Perpat); a shoal extends NE within the 10m curve to a position 10 miles NE of Tanjung Malang.

The central portion, with depths of 1.8 to 5.5m, is 8 miles long, and its N end lies 5.5 miles SSE of **Tanjung Pasingkep** (Pa Singkep) (0°30'S., 104°35'E.).

Tanjung Buku (Boekoe) (0°41'S., 104°22'E.), the SW point of Pulau Singkep, in range with the N end of **Keling Island** (0°41'30"S., 104°28'00"E.), bearing 270°, leads S of these shoals.

At **Tanjung Tija** (Tidja) (0°28'S., 104°36'E.), the E point of Pulau Singkep, the 10m curve is about 2 miles offshore, but E of the point a drying bank extends from the coast, and the 10m curve is 5 miles NE of Tanjung Tija. About 5 miles N of that point lies a bank nearly 4 miles long, in an E and W direction, with depths of 2.7 to 5.5m; its E edge is about 5 miles from the coast. The patch on its W edge dries at LW.

On the S side of Pulau Lingga, between **Tanjung Bliung** (Blioeng) (0°16'S., 104°31'E.) and **Tanjung Boear** (0°19'S., 104°51'E.), the coast forms a shallow indentation, known as **Lingga Bay** (0°15'S., 104°40'E.); the bay is about 20 miles wide, with the 5m curve running almost straight across between the points. There are various islets and reefs in the W part of the bay. The NW point of the reef surrounding Kelombok Islet is marked by a beacon.

8.13 Megalang (0°17'S., 104°39'E.), the outermost islet in the bay, is overgrown. A few rocky patches lie S of Megalang Islet; among them are **Titi Mengalang** (0°19'00"S., 104°39'30"E.), Ular and **Sebangga** (0°19'12"S., 104°38'30"E.) and **Sebangga Laut** (0°19'45"S., 104°38'15"E.). For other shoal patches in the vicinity, the appropriate chart is the best guide.

Batu Kapal (De Hes Rock) (0°21'S., 104°52'E.), a reef on which there is a depth of 1.8m, lies 2 miles offshore, about 3 miles W of **Tanjung Goroh** (0°20'S., 104°55'E.); it is marked by tide rips. Tanjung Jang (Djang) Light is obscured over it.

A shoal, with a depth of 7.8m, lies nearly 1 mile SSE of **Kapas** (0°08'N., 104°42'E.).

Karang Busung (Boesoeng) (0°08'45"N., 104°41'30"E.), a reef about 1 mile in length in a NE and SW direction, lies about 1 mile NW of Kapas.

An 8.7m patch lies about 3 miles W of Karang Busung.

A shoal, with a least depth of 4.1m, lies about 2.7 miles E of **Bakau** (0°05'N., 104°45'E.).

Karang Pollux (0°10'N., 104°47'E.), with a least depth of 0.5m, lies about 5 miles NNE of Bakau, on the S side of the E approach to Selat Temiang (Temiang Strait). An obstruction is charted 5.5 miles N of Karang Pollux.

Soundings give no indication of this rock; there is no discoloration in the vicinity.

A 4.1m patch lies 0.75 mile offshore, about 6 miles NNW of **Kelombang Rocks** (0°09'N., 104°36'E.).

8.14 Limas (0°15'N., 104°30'E.), 79m high, an island at the N extremity of Sebangka, is connected with it by a reef. A depth of 7.9m lies about 1 mile N of the N point of Limas, and there are rocks above and below-water extending about 1 mile W of the N point.

Madgeburg Shoal (0°26'N., 104°35'E.), with a least reported depth of 4.5m, lies about 2 miles NE of the E end of Pulau Mesanak. A depth of 10.1m lies about 4.2 miles ENE of the same point.

An extensive shoal, about 0.5 mile long and with a least depth of 9.1m, lies with its outer edge about 2 miles E of the E end of **Pulau Nyamok** (Njamok) (0°20'N., 104°33'E.).

8.15 Heluptan Reef (Admiral Stellingwerf Reef) (0°37'N., 105°09'E.), marked by a light, is the outermost of the reefs lying off the SE coast of Pulau Bintan. It is a rock covered with coral, nearly 0.3 mile long, with a least depth of 0.4m and is steep-to.

There are depths of 34.7 to 36.6m fairly close, except at the NE side, where irregular depths of 18.3 to 20.1m extend 2 miles off. A depth of 29m lies about 9.2 miles ENE of Heluptan Reef, and an obstruction lies 33 miles NNE.

The N end of a narrow sand ridge, with depths of 11.9 to 18.3m, steep-to on its E side, lies about 9 miles NW of Heluptan Reef. From the SW end, the bank trends in a SW and W direction for about 33 miles to Pulau Mesanak, at the entrance to Selat Merodong and Selat Riau. In the NE monsoon, when rain and thick weather are experienced, obtaining soundings on this bank will afford a good guide to clear Heluputan Reef and Gosong Ara.

Gosong Ara (Geldria Bank) (0°47'N., 104°57'E.) is the outermost danger, lying 13 to 14 miles E of Pulau Gin-besar.

Its NE end lies about 14 miles of the ENE of Numbing, where the bank extends in a SW direction for about 3 miles, having rocky heads with depths of 5.5 to 9.1m, and 27 to 37m close to the E or seaward side.

Gosong Raleigh (Raleigh Bank) (0°46'N., 104°54'E.), lies about 3 miles W of the SW end of Gosong Ara, and has a depth of 5.9m over coral bottom. Several shoal patches lie to the NE and SSW. Vessels should pass E of Gosong Ara and Gosong Raleigh.

A patch, of coral and sand, nearly 1 mile long, with 6.9m of water, lies about 5 miles SE of **Pulau Beruan** (0°46'N., 104°49'E.).

Kayu Ara (Kaju Ara) (0°50'N., 104°56'E.), lying about 2.2 miles WNW of the N end of Gosong Ara, are three low rocks, the highest of which is 4m above HW.

A rocky patch, with 10.1m of water, lies about midway between Kaya Ara and the N end of Gosong Ara; there are eddies or tide rips near these dangers.

A sandy shoal, with depths of 8.2 to 11m, lies with its N end about 5 miles W of the W end of **Pulau Merapas** (0°56'N., 104°55'E.) and extends about 5 miles SSW.

Rocks extend about 1 mile off the NE end of **Pulau Mapor** (1°00'N., 104°49'E.). There are others, some above-water, off its SE end; the outer one, named **Bare Rocks** (0°57'N., 104°52'E.) are 16.8m high.

Melibon (1°01'53"N., 104°46'32"E.), a pyramidal-shaped islet 26.8m high, lies 0.6 mile NW of the NW end of Pulau Mapor.

Passage Rock (1°01'30"N., 104°51'15"E.), 7.9m high, lies about 0.7 mile N of the NE end of Pulau Mapor; there is a rock about 0.5 mile ENE of the same point.

8.16 Middle Rock (1°03'54"N., 104°46'37"E.) is a pinnacle, awash at LW, and depths of 20m close-to, lies 3.25 miles WNW of Pulau Sentut.

Black Rock (1°05'16"N., 104°44'23"E.), 6.7m high, with a smaller rock close to its S side and depths of 24 to 31m around, lies about 6 miles WNW of Pulau Sentut.

A dangerous sunken rock, with less than 4.9m, lies about 1.7 miles to the ENE of **Pulau Berlangkap** (1°06'24"N., 04°39'40"E.). A wreck is stranded on this rock.

Pulau Saya (0°47'S., 104°56'E.), 210m high, is a good radar target at a distance of 19 miles.

Pulau Singkep is of considerable elevation, having on its NE side a range of hills, the summit of which, **Gunung Landjoet** (0°25'45"S., 104°30'38"E.), is 515m high.

8.17 Laboe (0°30'S., 104°29'E.), the S end of the range, is 437m high. Farther S is **Manindjoet** (0°34'30"S., 104°27'45"E.), 170m high. On the W side of the island is **Gunung Bidei** (0°29'30"S., 104°20'30"E.), 209m high. The remaining portion is low, with an isolated hill here and there.

A radio mast, 6.7m high, from which an obstruction light is shown, stands about 0.5 mile NNW of the root of the pier at the village of **Dabo** (Kotadabok) (0°30'S., 104°34'E.); a buoy marks a wreck which lies off the above pier. A TV mast marked by three lights (fixed yellow) stands close to the coast at Dabo.

The N portion of Pulau Lingga is hilly, the peaks attaining heights of 202 to 226m. On the island's SW part is **Gunung Daik** (Piek van Lingga) (0°12'S., 104°33'E.), a remarkable mountain attaining an elevation of 1,206m and split in two; it is visible from a considerable distance in clear weather.

Gunung Sepincan (Gunung Sepintjan) (0°09'30"S., 104°34'45"E.), with a flat top, 1,028m high, rises about 3 miles NE of Gunung Daik.

Batu Gajah (Batoe Gadjah) (0°09'30"S., 104°35'15"E.) lies on its E slope, the E side of which has a gray Y-shaped patch.

Tanjung Jang (Djang) (0°18'S., 105°00'E.), the E end of Pulau Lingga, is conspicuous, and visible in clear weather from a distance of about 30 miles. A light is shown from an iron framework near a stone dwelling, 20m high, on the point.

A light is shown from an iron frame structure, 33m high, on a hill at the SE end of **Pulau Kentar** (0°02'N., 104°46'E.); the island is a good radar target at a distance of 20 miles.

The summit of Pulau Sebangka, near the center of the island, is 156m high, and the hill NE of **Tanjung Gantong** (0°01'N., 104°42'E.), the SE extremity of Pulau Sebangka, is 134m high.

Pulau Mesanak (0°25'N., 104°31'E.) is a good radar target at a distance of 10 miles.

It was reported that **Pulau Nyamok** (0°20'N., 104°33'E.) was a good radar target at a distance of 12 miles.

Gunung Kidjang (0°55'N., 104°38'E.), a number of variously-shaped hills, are located on the SE side of Pulau Bintan; the SE most is 242m high.

Gunung Koeas (0°52'15"N., 104°34'45"E.), a blunt cone 233m high, about 4 miles SW of Gunung Kidjang, has a summit in the form of a truncated cone.

Temborah (0°50'N., 104°39'E.), 141m high, rises on the E side of Pulau Kelong.

Several hills on the islands of Gin-Besar, Ginkecil, and **Numbing** (0°45'N., 104°44'E.) are from 61 to 77m high, and one rising about the center of Gin-Besar, is 77m high and has a solitary tree on it; it is a prominent mark when making Selat Riau (Riouw Strait).

8.18 Pulau Merapas (0°56'N., 104°55'E.) is a good radar target at a distance of 18 miles.

Pulau Mapor (1°00'N., 104°49'E.) is a good radar target at a distance of 17 miles.

There are several islets off and near the coast of Pulau Bintan. The most conspicuous of these is **Pulau Nikoi** (Nikvi) (1°03'N., 104°43'E.), 61m high. It forms the W side of the N entrance to the channel within Pulau Mapor.

A hill, 110m high, lies about 2.7 miles WNW of **Tanjung Berlangkap** (1°06'N., 104°38'E.), and another hill, 100m high, rises about 2 miles W of the first-mentioned hill.

Pilotage.—A vessel bound for **Kijang** (0°51'N., 104°36'E.) from an infected port should call at **Pulau Sambu** (Sambo) (1°10'N., 103°54'E.) for pratique. If the vessel has a clean bill of health, the vessel may proceed directly to **Tanjungpinang** (Riouw) (Rhio) (0°56'N., 104°27'E.) for a pilot.

Vessels should arrive before 1430 hours local time if they expect pilotage to **Kijang** (0°51'N., 104°36'E.) the same day.

A pilot for Kijang may also be embarked 0.5 mile S of **Tanjung Tili** (0°49'N., 104°36'E.) or off **Temborah Laut** (0°49'N., 104°41'E.); in this case, the vessel should arrive before 1600 hours for pilotage the same day. Pilotage is compulsory.

Application for pilotage should be made 48 hours prior to ship's arrival via the radio station at **Tandjung Uban** (Oeban) (1°04'N., 104°13'E.).

Permission must be obtained to enter **Selat Kijang** (Kidjang Strait) (0°50'N., 104°37'E.).

Signals.—The following tidal signals are shown from the wharf at Kijang:

1. A cylinder, with a cone, point up, above it, indicates that the tidal current is flowing in.
2. A cylinder, with a cone, point up, above it, and a cone, point down, below it, indicates that the tidal current is flowing out.

Anchorage.—Anchorage may be taken in 29m, with the tangents of **Pulau Saya** (0°47'S., 104°56'E.) bearing 095° and 187°; the anchorage ground is poor.

On the N side of **Tanjung Jang** (Djang) (0°18'S., 105°00'E.) are two small shallow bays with sandy beaches.

The E bay affords good anchorage during the SSE monsoon to vessels drawing up to 3.7m of water.

Temporary anchorage may be taken on the W side of Pulau Selentang (0°07'S., 105°00'E.) in about 20m of water.

At some distance off the NE coast of **Pulau Sebangka** (0°08'N., 104°35'E.), good anchorage may be obtained in depths of 12.8 to 14.6m, sand.

East of **Aloet Island** (0°04'S., 104°42'E.), between it and Kongka Islands, there is a wide space in which there is good anchorage in depths of about 7.3 to 9.1m, mud and sand bottom.

Good anchorage may be obtained about 2 to 5 miles E of the E end of **Pulau Mesanak** (0°25'N., 104°31'E.) in depths of 11 to 14.6m, mud and sand.

On the E side of **Pulau Mapor** (0°56'N., 104°55'E.) is a small sandy bay where vessels may anchor in 9.1 to 11m, about 0.7 mile offshore. As the bottom in parts of this bay is foul, care must be taken to keep **Bare Rocks** (0°57'N., 104°52'E.) open E of **Lee Islet** (0°59'00"N., 104°51'30"E.), 18m high, off the S end of the bay.

Directions.—Heluptan Reef lies in the direct track of vessels, and the utmost care is necessary to avoid it. A vessel will keep E of it by not going into less than 48m and to the W of it by keeping **Gunung Koeas** (0°52'N., 104°35'E.) on Pulau

Bintan and **Pulau Beruan** (0°46'N., 104°49'E.), 90m high, well in sight, until the latter bears 290°, which leads well N.

Pulau Teroti (0°42'N., 104°47'E.), bearing 270°, leads S of **Gosong Ara** (0°47'N., 104°57'E.) and other shoals.

Pulau Kayuara (0°49'52"N., 104°56'20"E.) in range with **Pulau Beruan** (0°46'N., 104°49'E.) leads N, and **Pulau Merapas** (0°56'N., 104°55'E.), bearing 333°, leads E of them.

Caution.—In light winds **Heluptan Reef** (0°37'N., 105°09'E.) may be distinguished by the discoloration of water, but with a fresh breeze it is difficult to distinguish breakers from the swell except when the tidal current is setting against the wind with a comparatively smooth sea.

Pulau Sentut (1°03'N., 104°50'E.), with **Middle Rock** (1°04'N., 104°47'E.), **Black Rock** (1°05'N., 104°44'E.), and **Pulau Berlangkap** (1°06'N., 104°40'E.) lying N and NW of Pulau Mapor, form a sort of chain stretching from outside the dangers off the N coast of that island to the shore of Pulau Bintan. Though there is a wide channel within Pulau Mapor, no vessel without local knowledge should attempt it.

Selat Riau (Riouw Strait) (0°55'N., 104°18'E.)

8.19 The route from Selat Bangka to Singapore, E of Pulau Lingga and through Selat Riau, is the one commonly used by vessels proceeding either way between Selat Sunda (Soenda Strait) and Singapore; the route is safe, sheltered, and easily navigable, with lights and beacons on many of the dangers. The route E of Pulau Bintan is exposed in both monsoons, and the fairway is encumbered with many dangers, which renders it necessary for vessels to keep off a considerable distance from land. Selat Riau is available for all classes of vessels, both by day and by night.

Selat Riau, the S limit of which is between **Pulau Mesanak** (0°25'N., 104°31'E.) and **Pulau Telan** (Telang) (0°44'N., 104°38'E.), is bounded on the E by Pulau Bintan, and on the W by the chain of islands, of which **Galang** (0°45'N., 104°15'E.), **Rempang** (0°52'N., 104°09'E.), and **Batam** (1°05'N., 104°02'E.) are the main ones.

Numerous smaller islands and shoals front the main shores on each side of the strait. The strait is about 50 miles in length, in a NW and SE direction, and has depths ranging from 10 to 55m in the fairway, with the least depths being in the S portion of the strait.

The S entrance of the strait is about 17 miles wide for a distance of 11 to 12 miles and then contracts to a width of 3.5 miles between **Pulau Karas-kecil** (Karas-ketjil) (0°44'N., 104°22'E.) and the shoals to the S of the **Tapai Islands** (0°46'N., 104°27'E.).

About the middle of the strait, and 3.5 miles N of **Pulau Karas-besar** (0°45'N., 104°20'E.), is **Pulau Pangkil** (0°50'N., 104°22'E.), with dangers extending 5 miles SE; between these and the dangers N of Pulau Karas-besar is the principal channel, about 2 miles wide, with fairway depths of 18.3 to 37m bounded on the W by **Pulau Mubut Laut** (Moeboet Laoet) (0°49'N., 104°18'E.), and the islets and dangers within it, off the NE end of Pulau Galang.

The principal dangers are marked by buoys or beacons. The shores of the strait are, for the most part, sparsely populated, the greater portion of the population consisting of Malays, with the remainder being Chinese.

At **Pulau Lobam** (0°59'N., 104°15'E.), about 10 miles NW of Pulau Pangkil, the strait is about 2 miles wide between **Johannes Shoal** (0°57'27"N., 104°11'32"E.) and **Orion Rock** (0°58'42"N., 104°13'24"E.); this is the narrowest part of the strait.

Northward of **Tanjunguban** (Tandjung Uban) (1°04'N., 104°13'E.), the W extremity of Pulau Bintan, the strait rapidly widens to its N entrance, where it is about 10 miles in breadth.

West Side of Selat Riau

8.20 Pulau Mesanak (0°25'N., 104°31'E.) forms the S side of the entrance to Selat Merodong, and the W side of approach to Selat Riau.

Benan (0°29'N., 104°27'E.), 3.5 miles NW of Pulau Mesanak, is the E most island of a group which separates Selat Merodong and Selat Pengelap. It is 2 miles long, tapering at both ends, and is 0.75 mile wide near the middle. The island is easily recognized by a conspicuous hill, it is 67m high, at its SE end. A reef fronts the greater part of Benan, extending from 0.25 to 0.5 mile off the N and NE sides.

Pulau Katanglingga (0°30'N., 104°25'E.), 1.5 miles NW of Benan, is a bold, bluff-looking island 1 mile long and 50m high at the N end; the S end is low. A reef fronts the greater part of it, extending in some places to a distance of about 0.2 mile. With onshore winds a heavy sea runs up on the E side of Benan and Pulau Katanglingga.

Pulau Galang (0°45'N., 104°14'E.) and **Pulau Galang Baru** (Galang Baroe) (0°40'N., 104°16'E.), S of it, both hilly and thickly wooded, are separated by Selat Penjabung. On the E side of these islands are numerous islands and reefs terminating E in Pulau Karas-besar.

Tanjung Maralagan (0°42'30"N., 104°18'48"E.), the SE end of Pulau Galang, is high and thickly wooded.

8.21 Dempo Point is the E end of **Korek Rapat** (0°40'30"N., 104°21'06"E.), which lies nearly 3 miles SE of Tanjung Maralagan, and is the E most islet of those lying in and fronting the bay formed between the two Galang Islands.

Selat Penjabung (Penjaboeng Strait) (0°42'N., 104°14'E.), with shores overgrown with mangroves, is only available to small craft with local knowledge.

Pulau Dempo (0°35'42"N., 104°18'42"E.), 45m high, lies about 1.3 miles SE of the S end of Pulau Galang Baru, and on the N side of the E entrance to Selat Dempo; it is a conspicuous, thickly wooded islet, showing round and bold against the adjacent land, and is one of the most useful objects for recognizing the entrance to both Selat Riau and Selat Dempo when coming from the S.

Pulau Ngual (Ngoeal) (0°39'N., 104°15'E.) lies close off the W side of Pulau Galang Baru, and is a narrow island 1.5 miles long, fringed by a reef.

Pulau Labun (Laboen) (0°39'54"N., 104°13'36"E.), fringed by a reef, lies about 0.5 mile NW of Pulau Ngual, and about the same distance offshore.

Kepulauan Melor (0°44'N., 104°11'E.), two in number, lie near the coast of Pulau Galang, about 5 miles NW of Pulau Labun.

Pulau Pandjang (0°48'N., 104°09'E.), 2 miles long, lies with its S end about 4 miles NW of Kepulauan Melor.

The W coast of **Pulau Rempang** (0°52'N., 104°09'E.), N of Pulau Pandjang, forms the E side of the approach to Selat Bulan, and is fronted by shallow flats to a distance of 4 miles.

8.22 Pulau Karas-besar (0°45'N., 104°20'E.) lying about 4 miles N of Korek Rapat, is 3.5 miles long and about 0.7 mile wide; it is hilly, with a flat summit, wooded, and has a reef encircling it extending in places for a distance of 0.25 mile.

Pulau Karas-Ketjil (Karas-Kecil) (0°44'N., 104°22'E.), an island marking the SW end of the narrow part of Selat Riau, is 26m high and about 0.3 mile long, E and W, formed by two small hills, and fringed by a reef. On its SW side is a sandy beach with a good landing place.

Tanjung Semandur (Semandoer) (0°47'36"N., 104°16'48"E.), the NE end of Pulau Galang, lies 2.75 miles NW of the W end of Pulau Karas-besar, and has on its N side a bight in which there is a village. A reef fronts the point to a distance of 0.25 mile.

Penika Islet (Steen) (0°46'15"N., 104°17'15"E.), consisting of some wooded rocks, is surrounded by a reef and lies about 1.3 miles NW of the W end of Pulau Karas-besar.

Pulau Mubut Laut (Moeboet Laoet) (0°49'N., 104°18'E.) and Mubut Darat, about 0.5 mile W, lie about 3.7 miles N of the W end of Pulau Karas-besar. Pulau Mubut Laut is 56m high and inhabited; it is the larger and higher of the two islands, and easily distinguished by its prominent position.

It rises to a round peak, with the greatest slope on the E side, while Mubut Darat is considerably lower toward its center and thickly wooded.

Tanjung Sembulang (Semboelang) (0°51'30"N., 104°16'06"E.), the E end of Pulau Rempang, is a rather precipitous point overgrown with trees on the W side of the main channel of Selat Riau; the hill within it is 75m high. The point is fronted by a reef to a distance of about 0.1 mile, close to which are depths of 11 to 14.6m.

Pulau Cemara (Tjemara) (0°55'N., 104°13'E.), the S most of the chain of islands, lies between Pulau Rempang and Pulau Bintan. It is hilly, partially covered with trees, 62m high, and about 2 miles long and 0.75 mile wide; it is fringed by a reef.

Pulau Tunjuk (Tandjuk) (Toendjoek) (0°56'36"N., 104°12'24"E.), lying about 1.25 miles N of Pulau Cemara, is flatter than the latter and is entirely covered with vegetation. It is 0.3 mile in extent and surrounded by a reef which projects about 0.2 mile off the E side; a ridge, with rocky patches, some of which dry, connects these two islands.

Pulau Subangmas (Soebang Mas) (0°57'N., 104°10'E.) lies about 2 miles NW of Pulau Cemara; **Pulau Airradja** (Airaja) (Ajer Radja) (0°58'N., 104°10'E.), lies close N and is separated by a narrow drying channel at LW. It is the northernmost of the islands lying between Pulau Cemara and the E entrance of **Selat Bulan** (Boelan Strait) (1°00'N., 103°56'E.). Both these islands are hilly and covered with tall trees.

Pulau Pentjaras (Pencaras) (0°58'21"N., 104°10'48"E.) is a small, round islet lying on the shore reef close to the NE end of Pulau Airradja.

Pulau Nginang (Ngenang) (1°00'N., 104°10'E.), a hilly island, situated about 2 miles N of Pulau Airradja, with Selat Bulan between, is about 3 miles long, N and S, tapering to the N. A reef fringes the S and E sides of the island, extending to a distance of 0.25 mile.

Pulau Tandjung Sau (Tanjungsau) (Tandjoeng Saoe) (1°03'N., 104°10'E.) lies close N of Pulau Ngenang; a hill rises to a height of 70m about 1 mile WNW of its E end. A reef of coral and sand, S of the island's E end, fronts the shore to a distance of 0.2 to 0.3 mile; its S portion forms the N side of **Pedissa Strait** (1°01'N., 104°10'E.), the narrow channel between Pulau Tandjung Sau and Ngenang Islands.

A reef, with a depth of 2m, lies 1.5 miles SE of Pulau Tandjung Sau Light. The reef is marked on its E side by a buoy.

Pulau Sau (Saoe) (1°03'48"N., 104°10'54"E.) lies on the NE part of the reef that surrounds Pulau Tandjung Sau; there is a conspicuous red patch on the E side of the island. A flat, with 3.6 to 4.6m of water, extends about 0.5 mile NW of the island.

The E coast of Pulau Batam, from abreast Pulau Tandjung Sau to **Tanjung Babi** (1°12'N., 104°06'E.), the W point of the N entrance to Selat Riau, is hilly and completely overgrown, with a few scattered villages; it is fronted by a reef, extending in some places to a distance of 0.75 mile and having on it some large, above-water, reddish-colored rocks. There are also several fishing enclosures on this reef.

8.23 Karang Leman (Rifleman Shoal) (0°28'30"N., 104°28'15"E.), lying about 1 mile E of Benan, is a patch of hard sand 0.3 mile in extent, with a least depth of 4.9m.

Terumbu Haai (Haai Reef) (0°35'30"N., 104°18'42"E.), with a least depth of 2.4m, lies 0.25 mile SSE of Pulau Dempo; there is an above-water rock about 0.3 mile inshore of the islet. It is well W of the track to Selat Riau.

A depth of 7.3m lies between the S end of a reef that fringes **Pulau Ngual** (0°39'N., 104°15'E.) and **Tanjung Koko** (0°37'12"N., 104°16'06"E.); a rock, with less than 1.8m, is reported between the above depth and the point.

Penyabung Rock (0°38'57"N., 104°13'44"E.), awash, lies about 0.5 mile SW of the N end of Pulau Ngual.

The channel between Pulau Ngual and Pulau Galang Baru is encumbered by several islets and reefs and should not be attempted without local knowledge.

Kepulauan Penjabung (0°43'N., 104°13'E.) lie in the W entrance to **Selat Penjabung** (Penjabung Strait) (Penjaboeng Strait) (0°42'N., 104°14'E.), with a dry rock at LW, about 0.6 mile to the W of the islets, a sunken rock and a 0.9m shoal lie 183m N and about 0.2 mile SW, respectively, of the drying rock. There are no known dangers outside the 10m curve.

A rock, awash at LW, lies 0.5 mile S of **Pulau Pandjang** (0°48'N., 104°09'E.). A 5m depth lies about 1 mile SE of the rock. About 0.6 mile S of the rock is the end of a shoal with depths under 9.1m extending SW from the S point of the W entrance to **Selat Tiung** (0°48'N., 104°14'E.). A wreck, dangerous to navigation, lies nearly 1 mile S of the rock.

Hangop Rock (0°52'42"N., 104°01'51"E.) lies on the N end of the outer flat about 4 miles W of **Tanjung Klingking** (0°52'N., 104°06'E.).

Great Bank (0°38'N., 104°19'E.) is located off the E side of Pulau Galang Baru, between Pulau Dempo and **Pulau Batubelobang** (Batu Belobang) (Batoe Belobang) (0°40'N., 104°19'E.), within the 10m curve fronting the bight; the bank is 1.5 miles long.

A shoal, with a least depth of 7.9m, lies a little less than 4 miles SE of **Pulau Karas-Ketjil** (0°44'N., 104°22'E.); its SW side is marked by a lighted buoy.

About 2 miles N of this buoy, with an intervening depth of at least 10.1m, lies the S tip of another shoal which extends about 4 miles SSW from **Pulau Tapai** (0°46'N., 104°27'E.).

A shoal, with a least depth of 8.8m, lies about 2.7 miles SSE of Pulau Karas-Ketjil.

A drying reef, 0.2 mile long, lies about 0.5 mile N of the W extremity of the island, with a similar reef close E. From abreast the latter reef, and extending nearly halfway along the N coast of the island, is flat with depths of from 3.8 to 5.5m, projecting 1 mile from the island; for 0.5 mile farther in the same direction the depths are under 9.1m.

Vessels, when abreast it, should keep the whole of Pulau Karas-Kebil well open of Pulau Karas-besar.

A reef, with a depth of 1.5m, lies 1.5 miles SE of Pulau Tandjung Sau Lighthouse.

8.24 Tjassens Bank (0°44'N., 104°20'E.) is triangular in shape, with its base, about 4 miles long, on the S side of Pulau Karas-besar; it has depths of from 0.9 to 5.5m. A drying reef lies 1.5 miles SSW of the SE end of the island.

There is a channel on each side of Tjassens Bank, but the N one, crossing the neck of the shoal, has a depth of 3.8m, and is only available for small vessels, the S channel, between Tjassens Bank and **Pulau Tandjung Dahan** (Tandjoeng Dahan) (0°41'N., 104°20'E.), is nowhere less than 0.75 mile wide, with depths of from 11 to 14.6m.

Care is necessary, however, when avoiding Tjassens Bank, to give a safe berth to a small reef which lies about 0.3 mile off the NE part of Pulau Tandjung Dahan; when the W end of Pulau Karas-besar bears about 045° steer to pass midway between the W extremity of that island and **Penika Islet** (0°46'15"N., 104°17'15"E.) to avoid reefs S of the latter.

A dangerous wreck lies about 0.5 mile E of Pulau Karas-Ketjil. A spit, with a least depth of 1.5m, extends about 0.3 mile N of Pulau Karas-Ketjil; a depth of 6.7m lies 0.15 mile S of the E end of the islet.

A shoal, with a least depth of 9.5m, lies about 0.75 mile NNE of Pulau Karas-Ketjil. Two 10.1m patches and an 8.7m patch lie, respectively, about 2 miles E, 1.75 miles ENE, and 2 miles NE of Pulau Karas-Ketjil.

Fish stakes are reported to be located in the vicinity of the 8.7m patch.

The main channel, previously described, is deep and about 1.2 miles wide between these patches and the islet. Depths of 7.8 to 11m are found between these patches and **Terumbu Rotterdam** (Rotterdam Reef) (0°46'N., 104°26'E.).

8.25 Karang Segutji (0°43'24"N., 104°22'30"E.) lies 0.9 mile S of Pulau Karas-Ketjil and uncovers. Shoals of 4.9m and 4.6m, steep-to on their E sides, extend about 0.2 mile SW and NNW, respectively, from Karang Segubi.

There is a shoal, with a least depth of 0.2m, about 1 mile E of **Penika Islet** (0°46'N., 104°17'E.).

A reef, with depths of less than 3.7m, on which there are some rocks drying at LW, it extends 2 miles S of **Pulau Mubut Laut** (0°49'N., 104°18'E.), which will be avoided by keeping the W end of Pulau Karas-besar bearing 192°.

A shoal with depths of 0.9 to 8.7m extends nearly 2 miles N from both islands. Fishing stakes encumber the area.

A drying reef lies about 1.3 miles S of the W end of Pulau Mubut Laut. The N extremity of Tanjung Sembulang, open of its E extremity, leads E of it, but the W end of Pulau Karas-besar well open of Pulau Mubut Laut, bearing 185°, is a better mark according to the chart, and it also leads E of the 8.5m patch lying about 2.2 miles E of **Tanjung Sembulang** (0°52'N., 104°16'E.). The E side of the 8.5m patch is marked by a lighted buoy.

Gosong Cemara (0°54'N., 104°14'E.), lying about 4 miles NW of Tanjung Sembulang and 1.5 miles E of Pulau Cemara, is about 1.3 miles long, NW and SE, with a least depth of 3m.

The E end of **Pulau Mubut Durat** (0°49'N., 104°18'E.) open of Tanjung Sembulang leads well E. A beacon marks Gosong Cemara.

A flat, with less than 5.5m, extends for a distance of nearly 1 mile from the SE side of Pulau Cemara; between it and Gosong Cemara the depths are from 6.1 to 9.1m.

An above-water rock, of a reddish color and having on it a conspicuous tree, lies on the shore reef off the NE point of **Pulau Subangmas** (0°57'N., 104°10'E.).

Johannes Shoal (0°57'27"N., 104°11'32"E.), lying on the E edge of the 5m curve fronting the bay between the E end of Pulau Subangmas and **Pulau Pencaras** (0°58'N., 104°11'E.), has a depth of 3.6m, with 12.8m close outside it.

Tanjung Sembulang, kept open E of **Tanjuk** (0°57'N., 104°12'E.), leads E of Johannes Shoal and of the reef extending from Pulau Pencaras.

Nginang Reef (0°59'33"N., 104°11'18"E.), small, awash, and usually marked by fishing stakes, lies on the N side of the E entrance to Selat Bulan, about 0.7 mile from the SE side of Pulau Nginang. Depths of 7.3 and 9.1m lie about 0.3 mile SW and NE, respectively, of the reef. The lighthouse on Pulau Tandjung Sau, bearing 354°, leads E of Nginang Reef; a dangerous wreck lies about 2 miles NNE of the reef.

A shoal, with a depth of 1.5m, lies about 2 miles SSE of the lighthouse on Pulau Tandjung Sau.

A dangerous wreck, position approximate, lies close SSE of the shoal. The lighthouse, bearing 338°, leads between Nginang Reef and the 1.5m shoal.

Tanjung Uban (1°03'51"N., 104°13'06"E.), bearing N of 012°, leads E of it.

Another dangerous wreck, best seen on the chart, lies about 2 miles ENE of the lighthouse on Pulau Tandjung Sau.

An islet, consisting of several rocks above-water, largely overgrown with brushwood, lies 0.5 mile NW of Pulau Tandjung Sau, and is surrounded by a reef which extends SW of it nearly 0.5 mile; the reef dries at LW, and has a rock on it above HW. About 0.5 mile NW of the islet is the S extremity of a narrow steep-to coral reef with a least depth of 0.3m; the N edge of the reef, which has a depth of 3m, lies about 3 miles NNW of the E extremity of Pulau Tandjung Sau.

A depth of 7.3m lies NW of this extremity, between it and the shore reef, in the fairway of the inshore passage. A 3.7m shoal 0.5 mile in extent is situated NE of the islet.

The depths decrease rather quickly under a depth of 18.3m near the dangers just described.

8.26 Malang Orang (Karang Passo) (1°08'N., 104°10'E.), an isolated reef, 0.5 mile in extent and which dries at LW, has depths of 9.1 to 14.6m close-to, and is 0.5 mile offshore, with a narrow channel, with depths of 7.3 to 11m between it and the

coastal reef; the drying portion lies 0.7 mile SE of **Tanjung Sabang** (1°08'27"N., 104°09'15"E.). A beacon is located on Malang Orang.

Karang Galang (Pan Reef) (1°09'N., 104°11'E.), lying in the N entrance of Selat Riau about 3 miles NE of Sabang, is marked by a light; it is visible at LW, when it appears as a ridge of black stones. The reef is 0.6 mile long, NE and SW, 0.2 mile wide, and steep-to in most places, with depths of 9.1 to 12.8m close-to.

A shoal, with a least depth of 7.4m, lies about 0.2 mile E of the light on Karang Galang; two 10m depths lie 0.3 mile ESE and 183m S, respectively, of the same light.

A wreck lies on the NW side of Karang Galang; two other wrecks lie 2.5 and 6.5 miles WNW, respectively, of the light on Karang Galang.

8.27 Pasop Reef (1°11'07"N., 104°09'07"E.), lying 2.5 miles NW of the light structure on Karang Galang and 1.3 miles offshore, is a coral patch, with a least depth of 1.8m and with depths of 7.3 to 9.1m.

Batu Betata, a small islet, lies on the coastal reef about 2 miles W of Pasop Reef.

There is a passage on either side of Karang Galang; on the W side between the reef and the coast of Pulau Batam, although not so wide as the E or main passage, has general depths of 11 to 14.6m. Vessels with a draft of less than 7.9m can safely use this passage by day. Native pilots seldom use the E passage, where the depths are much greater.

An 8.2m shoal lies about 0.7 mile SW of the beacon on the SW side of Karang Galang. A rocky patch of small extent, with a depth of 7.3m, lies 2 miles SSW of the light on Karang Galang.

Mariners will find no difficulty in proceeding by either channel aided by the chart. The depths in the E channel are too irregular to admit of any useful description here, but the light structure on Karang Galang will always point out the position of that danger in time to give it a proper berth.

Aspect.—**Pulau Mesanak** (0°25'N., 104°31'E.) and the 186m peak on **Merodong** (0°24'N., 104°27'E.) are useful marks from the offing in making Selat Riau.

The peak on Merodong, when seen from the S, presents a conical appearance, and, being the only hill of this feature in the vicinity, is conspicuous. It is one of the principal objects which will enable a stranger to identify the entrance to Selat Riau, for it can nearly at all times be seen over Pulau Mesanak as the strait is approached.

The hill, from the peak, forms a shoulder to the NW and gradually slopes in that direction, so that after Pulau Mesanak is passed the conical shape disappears.

Pulau Gin-Besar, Pulau Gin-Ketjil, and **Pulau Numbing** (0°45'N., 104°44'E.), on the opposite side of the approach to Selat Riau, are also good marks.

The shores of Selat Riau are heavily wooded and at various places small villages are located.

Another good mark is **Tafelberg** (Bukit Peg Datar) (0°41'28"N., 104°13'26"E.), a table-topped mountain rising to a height of 182m, on the W coast of Pulau Galang-Baru.

A light is shown on the SE side of **Pulau Karas-Kebil** (0°44'N., 104°22'E.).

Range lights located on Pulau Tunjuk, lead through the N entrance of Selat Riau, but the beacons on which the lights are shown are difficult to recognize.

A light is shown on the E end of **Pulau Tandjung Sau** (1°03'N., 104°10'E.).

A light is shown on the NE end of **Karang Galang** (1°09'N., 104°11'E.).

Anchorage.—Good anchorage may be obtained on the bank that extends about 4 miles E of **Benan** (0°29'N., 104°27'E.) in depths of 10.1 to 18.3m.

Temporary anchorage may be obtained on and within **Great Bank** (0°38'N., 104°19'E.) for vessels of light draft; the bank has a least depth of 3.2m.

Good anchorage may be obtained S of **Cemara Bank** (0°54'N., 104°14'E.) during the SE monsoon in 9.1m, with the E end of **Pulau Mubut Laut** (0°49'N., 104°18'E.) just open of **Tanjung Sembulang** (0°52'N., 104°16'E.), bearing 135°, and **Pakaul Islet** (0°52'06"N., 104°14'42"E.) bearing 180°.

Directions.—The E end of **Pulau Karas-Ketjil** (0°44'N., 104°22'E.) open off **Dempo Point** (0°40'37"N., 104°20'57"E.), the E end of Korek Rapat bearing 020°, leads E of **Terum Haai** (0°35'N., 104°39'E.).

The lighthouse on **Pulau Tandjung Sau** (1°03'N., 104°10'E.) in range with the E end of **Pulau Sau** (1°04'N., 104°11'E.), bearing 174°, leads E of the dangers in the vicinity of **Van Goghs Islet** (1°04'N., 104°10'E.), and **Malang Djarum** (1°05'52"N., 104°13'15"E.), an islet off the E shore bearing 104°, leads N.

The lighthouse on Pulau Tandjung Sau, in range with the E end of Pulau Sau, bearing 174°, is a good mark for passing between Karang Galang and Pasop Reef.

Tandjung Butan (Tandjung Boetan) (1°07'N., 104°09'E.), on the E coast of Pulau Batam, bearing 192°, also leads E of Batu Betata. The lighthouse on Pulau Tandjung Sau, bearing 186°, leads E of Karang Galang and Batu Betata, and when **Pulau Nongsa** (1°12'N., 104°05'E.) is open of **Tanjong Babi** (1°12'N., 105°06'E.), a vessel will be N of them and in Singapore Strait.

East Side of Selat Riau

8.28 Pulau Telan (Telang) (0°44'N., 104°38'E.), the SW point of which forms the SE limit of Selat Riau, is irregularly-shaped and nearly 5 miles long, NE and SW, and about 1 mile wide. It is divided into two parts and may be identified by a square hillock on its S end, 63m high, which, with a sharper peak W of it, forms a saddle; the land from here to the W end is the same elevation.

Pulau Mantang (0°47'N., 104°33'E.) and **Pulau Senajolong** (0°47'N., 104°37'E.), separated by the narrow channel **Selat Mara Limau** (0°47'N., 104°35'E.), are together about 8 miles long, E and W, 1.5 miles wide, and lie NW of Pulau Telan. The channel is navigable only by small craft as the entrance is shallow.

Pulau Mantang, the W island, is low, overgrown with mangroves, especially on the S coast, and encircled by a reef that dries. The W side of the island is foul to a distance of about 0.2 mile. On the N side of the island are the villages of Baru, Mantang, and Riouw.

Between Tanjung Punggung, the SW end of Pulau Mantang, and the SW end of Pulau Senjolong, is a bay fronted by a fringe of reef and a shallow bank extending in places nearly 0.75 mile upon which the latter lie detached patches of reef.

Selat Telan (Selat Telang) (Telang Strait) (0°45'N., 104°37'E.), between Pulau Senjolong and Pulau Telan, is about 2 miles wide. Another channel lies between Pulau Mantang and Pulau Senjolong on the S and the coast of Pulau Bintan to the N. These channels should only be used by vessels with local knowledge.

Pulau Rongas (0°45'N., 104°29'E.), a small rock island, thickly wooded and 50m high, is about 0.7 mile long and 0.2 mile wide; it lies about 2 miles WNW of Tanjung Punggung.

From a distance this island looks very much like Southwest Hill on the SW end of Pulau Mantang. There is a channel between Pulau Rongas and Pulau Mantang, but it is not advisable to use it without local knowledge.

8.29 Pulau Belading (0°47'45"N., 104°29'15"E.), lying about 2.2 miles N of Pulau Rongas, is small, conspicuous, and covered with trees; it is surrounded by a reef which extends about 0.2 mile S.

Eastward of Pulau Rongas and Pulau Belading are several other islands lying off Pulau Mantang; they are wooded, but lower than Pulau Belading.

Pulau Tapai (Tapai Islands) (0°46'N., 104°27'E.) are a cluster of five round islets, covered with vegetation and lying on coral ledges, between 2 to 3 miles W of Pulau Rongas, on the E side of the entrance to Selat Riau. The E group, consisting of three and the W of two, both lying on drying reefs, are separated by a channel.

When approached from the S these islets, as they rise above the horizon, present very much the appearance of the hats in use among the Malays.

The NW and the E islands are the largest of the group; the former is 25m high while the latter is 40m high.

Pulau Pangkil (0°50'N., 104°22'E.), attaining an elevation of 48m, is about 2 miles in length in a N and S direction and 0.5 mile in breadth; it is hilly, wooded, and lies on the E side of the main channel of Selat Riau, abreast Pulau Mubut Laut.

It is surrounded by a reef which extends from 0.25 to 0.5 mile from the shore; near its SW point there is a narrow, sandy beach and a village. A light is shown from the SW point of Pulau Pangkil.

8.30 Pulau Soreh (0°51'22"N., 104°23'27"E.), lying NE about 2 miles ENE of the NE end of Pulau Pangkil, is a small, low islet inhabited and covered with coconut trees; it is surrounded by a narrow sandy beach and a reef which extends to the distance of 0.25 mile in places.

Pulau Dompak (0°53'N., 104°27'E.), 4 miles long and about 2 miles wide, is separated from the W coast of Pulau Bintan by **Selat Dompak** (Dompak Strait) (0°53'N., 104°28'E.), a narrow channel only available to boats.

The land in the vicinity of the channel is quite hilly surrounded with tall trees as opposed to low land at the W extremity of the channel. Dompake Village is located at the E

extremity of the channel near **Tanjung Rambut** (0°52'03"N., 104°29'24"E.).

Pulau Basing (0°51'24"N., 104°25'36"E.) and **Pulau Sekatap** (0°51'12"N., 104°27'30"E.), two low and wooded islets, lie off the S shore of Pulau Dompak, both being on a reef; the former islet is inhabited.

Tanjung Pinang (0°55'N., 104°27'E.), located N of Pulau Dompak, was formerly Rhio Island. The town and harbor of Tanjungpinang are located at its NW end.

8.31 Pulau Penyengat (Pulau Penjengat) (0°56'N., 104°25'E.) is a hilly thickly wooded island, situated 1 mile W of Tanjungpinang; it is about 1 mile in length, 0.3 mile in breadth, and surrounded by a reef to the distance of 0.2 mile.

The island is connected with Senggarang, N of it, by a flat with a depth of about 0.3m at LW, within which is Tanjungpinang inner roadstead.

A 2.2m patch lies 1.25 miles SW of the SW extremity of Pulau Penyengat, with a 3.3m patch about 0.1 mile E.

Senggarang (0°58'N., 104°26'E.) is separated from Pulau Bintan by a narrow channel filled up with mud and overgrown with mangroves. The W end of Senggarang projects some 3 miles NW of Tanjungpinang.

There is a large Chinese village on the S part of Senggarang, opposite the town of Tanjungpinang. An obstruction lies 0.75 mile NNW of the town.

Tanjungpinang (Rhio Town) (Riouw) (0°55'45"N., 104°26'45"E.) (World Port Index No. 50040), the chief town of the district, and the head of the government division of Bintan, is situated on the NW point of the peninsula. Fort Crown Prince (Krooprins) stand on a 71m high hillock located S of the town. A pier extends about 0.15 mile NW of the town.

Three oil berths, each 183m long with depths of 11.7m. alongside, reported to be capable of accommodating vessels up to 210m long. Another berth, with a depth of 17.4m alongside, is reported suitable for a vessel up to 240m long.

Pulau Los (0°57'21"N., 104°24'30"E.), about 0.5 mile W of the W end of Senggarang, is small, wooded, and low at the sides, but in the center is a hill 41m high; the islet is surrounded by a narrow reef on which there are some rocks.

8.32 Pulau Ujan (1°00'N., 104°23'E.), 18.3m high, is a somewhat flat island, overgrown with trees; it is separated from the S coast of Pulau Bintan by a narrow boat channel. On the SE side of the island is the village of Pengudjan. A bank of mud, sand, and rocks that dries extends about 0.5 mile S of the island; a sandy spit extends nearly the same distance E from the SE end.

Teluk Bintan (Bintan Bay) (1°01'N., 104°26'E.) indents the coast to the E of Pulau Ujan, into which several small rivers discharge. Kapal and **Ketir** (1°00'N., 104°26'E.) are two low, wooded islets lying on a bank that dries on the E side of the entrance to the bay.

The S coast between Pulau Ujan and Pulau Lobam, about 7 miles W, is low and wooded; a bank extending off it dries at LW for a distance of 1 mile in places.

Pulau Terkulai (Terkoelai) (0°57'N., 104°21'E.), lying about 3 miles SW of Pulau Ujan, is low, flat, sandy, and surrounded by a reef which in places extends nearly 0.5 mile; it is about 0.6

mile in length in an E and W direction, overgrown with trees, and has coconut palms on its W side.

Pulau Loban (Pulau Lobam) (0°59'N., 104°15'E.), located about 0.5 mile off the SW part of Pulau Bintan and separated from it by a channel with depths of 9.1 to 29.3m, is highest on the W side. A group of trees stand on the NW hill, the highest of which, with a conspicuous wide flat top, is above the water.

The middle and E parts are lower and partly covered with mangroves, with mangrove lined channels running through them.

Pulau Lobam-Ketjil (Lobam-Kecil) (0°58'51"N., 104°13'51"E.), W of Pulau Loban, is hilly and wooded; the island appears as three peaks when viewed from N.

A reef, which is steep-to, almost surrounds the islands and extends in places to the distance of 0.3 mile. On the N side there is a narrow sandy beach and a village; another village, the houses of which may be seen from the strait, is located on the S side of the island.

Pulau Buan (Pulau Buau) (Pulau Boeau) (1°03'N., 104°14'E.), flat at its N end and rising to an elevation of 28m near its S end, fronts the bight between **Tanjung Talu** (1°01'N., 104°14'E.) and Tanjung Uban, about 3 miles NNW; it is thickly wooded and with the exception of a round lump which rises in its center. It is reported to be lower than the adjacent land. There is a white rock on the reef on its W side.

The island is bordered by a reef to a distance of about 0.1 mile. A light is exhibited from the N end of the island.

There is a reef, with a depth of 2.1m, 0.5 mile N of Pulau Buan.

Tanjung Uban (Tanjunguban) (1°04'N., 104°13'E.) (World Port Index No. 50030) is situated on Pulau Bintan in the N entrance of Selat Riau. There is good anchorage but currents are strong. The Mercantile concrete jetty is 48m long, with an alongside depth of 6.5m. Tugs are available.

Tanjung Uban is primarily an oil terminal for trans-shipping oil owned by P. T. Stanvac Indonesia. There are four berths, which accommodate vessels up to 243m long, with a maximum draft of 11.7m.

There are two berths for the LPG plant, with depths of 11.7 to 17.4m alongside.

Pilotage for berthing is reported to be compulsory for all vessels. Advanced notice of 72 hours must be given. Vessels will only be berthed between the hours of 0600 and 1800 and unberthed at any time.

8.33 Malang Djarum (1°06'N., 104°13'E.) is a small islet, covered with low trees, lying about 2 miles N of Tanjung Uban, on the edge of the reef fronting the shore, which extends about 0.4 mile off.

Sekerah (1°07'15"N., 104°14'40"E.), a wooded islet about 24m high, lies 2 miles NE of Malang Djarum and close off **Tanjung Sebung** (1°07'N., 104°15'E.).

The shore reef which fronts the coast from Tanjung Uban extends about 0.3 mile outside Sekerah. To the NE it blocks the whole of **Teluk Sebung** (Sebung Bay) (1°09'N., 104°17'E.), between Sekerah and Tanjung Tondang, about 6 miles ENE; the bay is encumbered with reefs.

Tanjung Tondang (1°11'N., 104°19'E.), the NW end of Pulau Bintan and the NE limit of Selat Riau, is a rocky, wooded point.

Pulau Tondang (1°10'45"N., 104°18'37"E.) lies a little more than 183m W of Tanjung Tondang and S of this islet there is a rock on which there are palms. Panjang islets or rocks lie on the shore reef SE of Tanjung Tondang.

Tides—Currents.—The tidal currents in **Selat Telan** (0°45'N., 104°37'E.), the channel S of Pulau Mantang and Pulau Senjolong, and the channel N of the same islands run with considerable strength; there are overfalls or tide rips.

The current runs at the rate of about 5 knots in the channel in the vicinity of Tanjung Uban, and about 2 to 5 knots at the berths at the loading station.

The tide in the China Sea comes from the N; and being divided by Pulau Bintan, sweeps around its shores and flows into Selat Riau at both entrances, the current from Singapore Strait at the N end meeting that from the S, NE of **Terumbu Soreh** (0°53'N., 104°23'E.).

The tidal currents in the S approaches to Selat Riau E of Pulau Lingga and the other islands has the flood current running NNW more or less parallel to the islands, with indrafts into the several straits, and the ebb in the opposite direction.

In the N entrance, on the W side, a portion of the flood current entering the strait is deflected between Malang Orang and **Karang Galang** (1°09'N., 104°11'E.) and runs as an eddy to the NW, with the flood to Singapore, or in the reverse direction to the flood current entering the main passage of Selat Riau.

The ebb takes the reverse direction, circling S of Karang Galang, where it joins the main current ebbing NE. This must be guarded against when near Karang Galang.

The main body of the S current follows the trend of the W shore past the **Karas Islands** (0°44'N., 104°22'E.) and turns gradually to the W into Selat Dempo, much of it diverging to the S through the channels dividing the several groups of islands lying between **Pulau Mesanak** (0°25'N., 104°31'E.) and Selat Dempo, and a portion turning off to the NW in the direction of Karas Islands.

This is joined by the currents flowing through Selat Telan and adjacent channels.

To the E of Pulau Pangkil, between it and the Pulau Tapai, the flood current from the N entrance is met by the flood current coming around the E side of Pulau Bintan and through Selat Telan and adjacent channels, which curves around Pulau Mantang, and thence taking a NW direction.

The direction of the flood current at Tanjung Pinang and N into Teluk Bintan is N. The flood current at Pulau Terkulai runs SE, toward Tanjung Pinang. The current sets W through Selat Bulan and Selat Tiung, on the W shore of Selat Riau.

The monsoons and currents of the China Sea very much affects the regularity of the currents, which are strong, and at springs rush with considerable velocity through the channels among the islands, forming numerous eddies and stirring up the mud.

In the narrow N part of Selat Riau, abreast Tanjung Uban, this is particularly the case, the current running from 3 to 4 knots, and sometimes even 4.5 and 5 knots.

A reef fringes the W end of **Telang Besar** (0°44'N., 104°38'E.) to a distance of about 0.2 mile, with depths of 11 to 12.8m close-to; a patch of 6.9m lies 0.35 mile W of the W extremity of the island.

Terumbu Hendrik Jan (Hendrik Jan Rock) (0°41'15"N., 104°37'45"E.), a small but dangerous pinnacle, with a depth of 3.2m, and 14.6 to 18.3m close-to, lies 0.3 mile SSE of the SE

point of Pulau Telan. A patch with a depth of 8.2m lies about 0.4 mile SW of the rock.

A rock, which dries at LW springs, lies about 0.5 mile E of the E end of **Pulau Senjolong** (0°47'N., 104°37'E.).

Gosong Thomas (Thomas Bank) (0°44'18"N., 104°34'39"E.), a patch 0.4 mile in extent, with a depth of 5m, lies about 0.7 mile WSW of **Pulau Serai** (0°44'45"N., 104°35'21"E.).

There is a ridge with 7.3m of water lying 0.6 mile W of Gosong Thomas.

8.34 Selat Telang (0°45'N., 104°37'E.) has varying depths of 26 to 44m in mid-channel and from 9.1 to 16m near the shore on either side. Some reefs lie at the E end of the channel N of the E extremity of Telang Besar, rendering it somewhat intricate; it should only be used by those thoroughly acquainted with it.

The channel N of **Pulau Mantang** (0°47'N., 104°33'E.) and Pulau Siulung, and the coast of Pulau Bintan N of **Pulau Bunut** (0°47'45"N., 104°35'00"E.) has several islands and reefs lying in places 2.5 miles from Pulau Mantang.

The farthest W of these are **Pulau Belading** (0°48'N., 104°29'E.) and Alligator Reef, about 1.2 miles S. Vessels should not pass E of a line drawn from them to **Pulau Ranggag** (0°45'N., 104°29'E.).

Two reefs, Malang Berdaun and Karang Pasir, lie on the N side of the channel. The entrance to this channel, between Karang Pasir and Pulau Belading, is 1.5 miles wide, with depths of from 7.3 to 9.1m, but E of **Pulau Antu** (0°48'12"N., 104°31'51"E.), the reported depths in mid-channel increase to about 12.8 to 26m.

Enam Village and the river of that name are situated on the Bintan coast N of Pulau Bunut, and a rock that dries lies about 0.2 mile SW of the river entrance.

All the coast is wooded but not high and at the E end of the channel are several islands and reefs, which makes local knowledge required. A number of the reefs are marked by fishing stakes.

A 5.5m patch lies about 0.6 mile WNW of the N end of Pulau Ranggag; another 5.5m patch lies about 0.5 mile SW of the same point.

Alligator Reef (0°46'27"N., 104°29'06"E.), dry at LW, lies about 1 mile N of Pulau Ranggag, and is about 0.25 mile in extent, with depths of 7.3 and 9.1m close-to. A shoal, with a least depth of 1.5m, lies between the reef and Pulau Mantang.

Several reefs, drying at LW, lie S of a line joining Pulau Belading and Pulau Antu; their positions are sometimes indicated by fishing stakes. North of the line joining the above islands, the channel is clear.

Eastward of Pulau Antu are **Pulau Kekip** (0°47'45"N., 104°33'45"E.) and **Pulau Bunut** (0°47'30"N., 104°35'00"E.), separated from Pulau Mantang by a narrow channel, in which there are depths of less than 7.3m; the two islands are entirely overgrown. A 7.3m shoal, marked by a black conical buoy, lies nearly 1 mile ENE of the E end of Pulau Antu.

8.35 Malang Berdaun (0°49'54"N., 104°28'54"E.), lying on the N side of the N channel about 2 miles N of Pulau Belading on the S side, is awash at LW, about 0.3 mile in

extent, and forms, with that island, the W entrance to the channel between Pulau Mantang and the coast of Pulau Bintan. It lies on the outer edge of the shallow bank which extends nearly 1 mile from the coast of Pulau Bintan at **Tanjung Motjoh** (Tandjoengmotjoh) (0°50'N., 104°30'E.). **Karang Landjut** (0°50'21"N., 104°29'12"E.), which dries, lies between Malang Berdaun and the shore.

Karang Pasir (0°49'30"N., 104°29'48"E.), lies 1 mile ESE of Malang Berdaun, with a spit having depths of 2.7 to 3.7m, extending 1 mile E from it. To the W of these reefs there are several large fishing enclosures, erected on the edge of the shore bank, which can be seen from some distance.

A small coral reef, which dries at very LW, lies 0.5 mile NNW of the W islet of **Pulau Tapai** (0°46'N., 104°27'E.). A shoal, about 0.5 mile long, N and S, with a least depth of 5m, lies with its outer edge lying 0.75 mile SE of the E islet of Pulau Tapai.

A shoal, with depths of 6.9 to 9.1m, extends SSW for about 4 miles from Pulau Tapai; this shoal lies near the E side of the fairway of Selat Riau and should be given a wide berth by vessels of deep draft, as less water might exist.

A 7.8m shoal, marked by a lighted buoy, lies about 5 miles SW of **Pulau Renggag** (0°45'N., 104°29'E.).

Terumbu Rotterdam (Rotterdam Reef) (0°46'15"N., 104°25'30"E.), about 0.75 mile W of the W islet of Pulau Tapai, is the S most of the shallow dangers bounding the S entrance of Selat Riau. It consists of sand and rocks, and has a least depth of 2.7m, with 5.5 to 9.1m around it; it is not marked by discoloration.

A beacon, surrounded by two red cylinders, stands on the W side of the reef.

A 7.8m shoal lies about 2 miles to the N of Terumbu Rotterdam.

A shoal composed of sand and stones, with a depth of 5.6m, lies about 0.3 mile WNW of Terumbu Rotterdam with the N end of the W islet of Pulau Tapai bearing 101°, distant 2 miles, and the light structure on Pulau Karas-Ketjil bearing 214°.

8.36 Dutch Shoal (0°47'48"N., 104°24'15"E.), 0.25 mile in extent, with 5.5m, and 11 to 12.8m close to its W side, lies about 1.3 miles SE of the SE end of Pulau Pangkil.

An 8.5m shoal lies about 1 mile W of the middle of the W side of Pulau Pangkil. A flat, with less than 5.5m, extends about 0.7 mile off the NW part of Pulau Pangkil; the 10m curve is nearly 1.3 miles from the island.

Pangkil Reef (0°51'24"N., 104°21'57"E.), a patch of rocks which dries at LW, is about 0.25 mile in diameter and lies about 0.6 mile N of Pulau Pangkil.

Rupels Reef (0°49'40"N., 104°23'09"E.), which dries at LW, is about 0.2 mile in extent and lies 1.5 miles SE of the NE end of Pulau Pangkil. A narrow ridge on which the depths are less than 5.5m extends about 0.7 mile S from Rupels Reef.

A flat, with depths of 3.7 to 9.1m, extends about 2 miles SE of **Pulau Soreh** (0°51'N., 104°23'E.). A lighted buoy marks the E side of a 5.5m shoal lying about 0.7 mile ESE of the same island; a dangerous wreck lies off the NE side of Pulau Soreh.

One of the reefs of **Terumbu Soreh** (Soreh Reefs) (0°53'N., 104°23'E.) lies about 1.3 miles NNW of Pulau Soreh; it is

about 0.3 mile in diameter, with depths 7.3 to 14.6m in the passage between. About 1 mile NW from this detached reef is the SE end of the largest of Terumbu Soreh; it is a narrow strip of sand and coral about 1.3 miles in length in a NW and SE direction, and surrounded by a flat with depths of 3.7 to 5.5m, with 9.1 to 12.8m close-to. They are covered at HW.

Patches of less than 5.5m extend 1 mile SE of **Pulau Basing** (0°51'N., 104°26'E.); E of it there is a reef which dries at LW.

From Pulau Basing, a bank with 2.7 to 5.5m near its edge, and 12.8 to 16.5m at a short distance, extends in a N direction, trending about 0.3 mile W of **Tanjung Setumu** (0°52'24"N., 104°25'15"E.), and then to Pulau Penjengat. A buoy is moored about 1 mile S of Tanjung Setumu. This buoy marks the edge of the coastal bank which extends from the W side of Setumu.

The navigable channel between Setumu and Pulau Soreh is about 0.7 mile wide, and is used by vessels bound to Tandjungpinang from the S.

An obstruction, marked by a beacon, lies about 0.5 mile S of the SW extremity of Pulau Penjengat.

A wreck, with a depth of 2.2m and marked by a buoy, lies sunk in the outer roadstead in a position 2.5 miles W of the light at **Tanjung Batuhitam** (0°54'18"N., 104°26'33"E.).

8.37 Teluk Bintang (1°01'N., 104°26'E.) is shallow, with the exception of a narrow channel from 0.25 to nearly 0.5 mile in breadth with a depth of over 5.5m, that commences abreast Pulau Penjengat, and runs for a short distance into it.

An isolated shoal, with a depth of 3.2m, lies nearly 0.5 mile outside the 5m curve, about 2 miles SE of the light structure on **Pulau Terkulai** (0°57'N., 104°01'E.); several patches, on which there are depths of 8.7m, lie within 1 mile W of the shoal. A buoy marks the SW side of the 3.2m shoal.

An isolated shoal, with a depth of 7.8m, lies about 4 miles SW of the light on Pulau Terkulai.

Two piles are located about 1.7 miles SW of the light on Pulau Terkulai.

An isolated shoal, with a depth of 6.9m, lies about 6 miles SSW of the light on Pulau Terkulai; a lighted buoy is moored close E of the shoal.

A rock, always visible, lies on the reef extending NW of **Pulau Lobam-kecil** (0°59'N., 104°14'E.); outside it are two rocks, awash.

Isabella Bank (0°57'N., 104°16'E.), located S of Pulau Lobam, is 0.7 mile in length, E and W, 0.2 mile in breadth, and has 1.8 to 3.7m. A spit, with 5.5 to 7.3m, stretches from its E extremity nearly 1 mile in an ESE direction.

The depths at a short distance from the S side of the bank are about 11m but its SW edge is steep-to, there being 20m at a short distance. A beacon stands near the center of the bank.

8.38 Orion Rock (0°58'42"N., 104°13'24"E.), lying on the E side of the fairway of Selat Riau, W of Pulau Lobam, is about 30m in extent, with a least depth of 4.6m and 11 to 14.6m close around it. It lies 0.4 mile W of the W end of Pulau Lobam-Ketjil.

Plasit Reef (1°01'N., 104°14'E.), which dries, lies about 0.5 mile SW of Tanjung Talu, on the S side of a shoal 0.25 mile in extent. Two patches of reef, together nearly 1 mile in length

and dry in places at LW, lie with their W extremity about 0.2 mile S of Plasit Reef; between these reefs and a reef with 1.8m, NW of Pulau Lobam, there are charted depths of 8.2 to 16.5m. A rocky patch, dry at LW, lies 0.3 mile N of Plasit Reef and the same distance offshore.

These dangers, which consist of sand and rock, are dry at LW and steep-to; between them and Pulau Bintan there is a channel about 0.2 to 0.3 mile in width, with depths of about 18.3m, then continuing NE of Pulau Lobam with depths of about 9.1 to 27m.

This channel leads S into Selat Riau, passing between the reef extending E of Pulau Lobam and **Irene Bank** (0°59'N., 104°17'E.).

Malang Senggera (1°04'45"N., 104°13'00"E.) is a ledge of flat rocks, which only covers at the highest tides, lying 0.2 mile offshore, about 1 mile N from Tanjung Uban. The reef fronting the shore extends 183m outside them, and at LW dry heads of rocks will be seen on this reef extending nearly as far as Tanjung Uban.

Malang Ladi (1°05'12"N., 104°13'00"E.) a group of rocks on the shore reef at 0.5 mile N of Malang Senggera, are above HW.

A patch of rock, with less than 1.8m of water, lies almost 1 mile NNE of **Malang Djarum** (1°05'52"N., 104°13'15"E.), which here lies 1 mile off the shore and is steep-to; it should be given a good berth.

There is a 12.8m patch lying 1.75 miles NW of Tanjung Sebong; an 11.9m patch lies 1.75 miles NNW of the same point. A 10.1m shoal lies 2.75 miles NNW of Tanjung Sebong.

Netscher Shoal (1°09'N., 104°15'E.), the outer part of which lies about 1 mile outside the edge of the shore reef, is about 0.5 mile in diameter, composed of hard sand and coral, and has a patch, with less than 1.8m on its NW edge.

This shoal spot lies 1.5 miles NNE of the W extremity of Sekerah. Close to the W side of this danger there are depths of 11.0 to 14.6m; it should be given a wide berth.

8.39 Crocodile Shoal (1°11'N., 104°17'E.), a small patch of hard sand, with a depth of 5.5m, lies about 2 miles W of Tanjung Tondang.

A rocky patch, consisting of three rocks, 0.75 mile SW of Crocodile Shoal; the W most rock lies 3 miles WSW of the N extremity of Tanjung Tondang. The two W rocks, are 183m apart, have depths of 2.1 to 2.4m. The E rock, which is smaller, has a depth of 3.7m. About 0.2 mile S of the W rock, there is a patch of 7.3m.

Batu Senukuh (1°09'22"N., 104°16'E.), the farthest offshore of the above rocks in Teluk Sebong, is 3m high and lies about 3 miles SE of the W end of Sekerah.

Batu Bunung (1°08'37"N., 104°15'58"E.), a rock which dries 1.8m, lies 0.75 mile S of Batu Senukuh.

There are other isolated rocks in Teluk Sebong, which can best be seen on the chart.

Southwest Hill (0°44'36"N., 104°30'56"E.) rises to a height of 81m on the SW end of Pulau Mantang, it is wooded and appears as a double-peaked hill when seen from the S.

A light is shown from **Tanjung Punggung** (Poenggoeng) (0°44'30"N., 104°30'45"E.), the SW end of Pulau Mantang; the point is a good radar target at a distance of 10 miles.

Siulung Hill (0°45'24"N., 104°35'15"E.) rises to a height of 126m near the SW end of Pulau Siulung. It rises abruptly on its N side and terminates S in a bluff point.

Pulau Serai (0°45'N., 104°35'E.), 20m high and inhabited, lies close S of the SW end of Pulau Siulung.

At a distance of 12 miles to the S, both Siulung and Southwest Hills, owing to the land between them being low, appear as islands.

A conspicuous tree, the top of which is 38m in height above HW, stands on a hill at the W end of **Pulau Penyengat** (0°56'N., 104°25'E.).

A light is shown on the N side of **Tanjung Batuhitam** (0°54'N., 104°27'E.).

At **Tanjungpinang** (0°56'N., 104°27'E.), a flagstaff stands on the end of the pier head.

Two lighted beacons, in range 004°, are shown near a wharf (0°56'30"N., 104°26'30"E.) on the S side of Senggarang.

8.40 Gunung Bintan-besar (1°04'N., 104°27'E.) and **Gunung Bintan-ketjil** (1°07'N., 104°27'E.), N of Teluk Bintan, are useful landmarks in approaching Singapore Strait from the China Sea, and are visible over a large portion of Selat Riau.

A light is shown near the W end **Pulau Terkulai** (0°57'N., 104°21'E.).

A light is shown on the SW end of **Pulau Lobam-Ketjil** (0°59'N., 104°14'E.).

Some oil tanks, with a boiler house, stand close N of **Tanjung Uban** (1°04'N., 104°13'E.); three tall chimneys are plainly visible when approaching from either N or S; radio masts stand about 0.5 mile S of the chimneys.

An unofficial light is shown from the head of each of the petroleum piers at Tanjung Uban.

A beacon, with a red cylindrical topmark, stands on the shore reef about 1 mile N of Tanjung Uban.

Directions.—The summit of **Pulau Lobam** (0°59'N., 104°15'E.) open of the W end of Pulau Pangkil, bearing 328° is a good mark to clear the W edge of the triangular-shaped bank that lies SE of **Pulau Pangkil** (0°50'N., 104°22'E.).

The lighthouse on **Pulau Terkulai** (0°57'N., 104°21'E.), bearing 085°, leads to the S of **Isabella Bank** (0°57'N., 104°16'E.); the lighthouse on **Tanjungsau** (1°03'N., 104°10'E.), in range with, or open of, the W end of Pulau Lobam-Ketjil, about 330°, leads well to the W of Isabella Bank.

For clearing **Orion Rock** (0°59'N., 104°13'E.), the light structure on Pulau Tanjungsau bearing N of 338°, or **Tanjung Uban** (1°04'N., 104°13'E.), bearing 002°, leads W, and the SE extremity of Pulau Lobam, bearing N of 090°, leads S of the rock.

Tanjuk (0°57'N., 104°12'E.) front range light, in sight at night, leads W of Orion Rock through the fairway of Selat Riau.

For clearing **Plasit Reef** (1°01'N., 104°14'E.), Pulau Lobam-Ketjil, bearing 161°, or E of that bearing, or Tanjunguban, bearing E of 000°, leads W of the reef and all dangers.

For clearing **Crocodile Shoal** (1°11'N., 104°17'E.), Sekerah, bearing 192°, leads W of the shoal and the patches SW; the N

end of **Tanjung Pergam** (1°11'24"N., 104°20'24"E.), bearing 088°, leads N of the shoal and the 5.9m patch 0.6 mile ENE.

For clearing all the dangers N of **Malang Djarum** (1°06'N., 104°13'E.), Pulau Tanjungsau Lighthouse, bearing S of 209°, leads W of the dangers.

8.41 Selat Riau from the S presents few difficulties. The normal care and prudence required in narrow waters should suffice in the fairway.

Some difficulty has at times been experienced by strangers in recognizing the entrance to Selat Riau, on account of the numerous islands in its vicinity.

The high conical peak of **Merodong** (0°24'N., 104°27'E.) should be made out as soon as possible, that being the first conspicuous object on approaching the strait.

If this can be discerned no difficulty will be found in making out the other points as the vessel is on its way to proceed.

Pulau Dempo (0°36'N., 104°19'E.), and Tafelberg Hill on that island, on the W side of the strait, the prominent hill on the SW end of Pulau Mantang, **Pulau Telang** (0°44'N., 104°38'E.), and **Pulau Gin-besar** (0°45'N., 104°44'E.), with a flat peak near its center, on the E side of the strait, will, at a distance of 14 miles, readily show the approach to the strait, while at a nearer distance **Pulau Karas-kecil Lighthouse** (0°44'N., 104°22'E.), **Pulau Tapai** (0°46'N., 104°27'E.), **Pulau Ranggalas** (0°45'N., 104°29'E.), and other islands can not fail to point out its entrance.

A vessel intending to proceed through the strait should, from a position about 13 miles E of **Tanjung Jang** (0°18'S., 105°00'E.), the E end of Pulau Lingga and from which a light is shown, steer 329° for about 39 miles to a position about 8 miles NE of **Pollux Rock** (0°10'N., 104°47'E.).

From this position a course of 312° leads into the middle of the S entrance of Selat Riau.

Care should be taken to guard against the strong tidal currents often encountered in this area.

From a position in the middle of the S entrance, about 6 miles SW of **Tanjung Punggung** (0°45'N., 104°31'E.), steer to pass W of the spit extending into the swept channel from the east shore.

The outer edge of this spit is marked by a lighted buoy located about 4 miles SE of Pulau Karas-kecil light in a depth of about 7.8m. From close W of the outer end of the spit shape a course to pass about 1 mile off Pulau Karas-kecil light.

From abreast Pulau Karas-kecil light, shape courses through the fairway to pass about 1.2 miles W of Pulau Labam-Ketjil, a distance of 17 miles, observing that the E end of Pulau Mubut Laut, bearing 183°, with the W end of **Pulau Karas-besar** (0°45'N., 104°20'E.) just open, astern, until the N extremity of **Tanjung Sembulang** (0°52'N., 104°16'E.) bears S of 259°, leads E of the 8.7m patch near the fairway.

Tanjuk light structures in range astern lead W of Orion Rock and E of a 1.5m shoal and wreck, located on the W side of the channel about 1.2 miles E of the N end of **Pulau Ngenang** (1°00'N., 104°10'E.), and E of **Karang Galang** (1°09'N., 104°11'E.), but they are not easily picked up from a distance when approaching from the N and are obscured by coconut trees when approaching from the S.

From abreast Orion Rock steer with Tanjung Uban bearing 002° until abreast the S end of **Pulau Buan** (1°03'N., 104°14'E.) to pass between it and the 1.5m shoal off the N end of Pulau Ngenang; then alter course to pass from 0.5 to 0.75 mile W of Tanjung Uban, steering to pass E of Karang Galang Light structure.

A dangerous wreck is reported to lie about 0.6 mile W of Tanjung Uban.

The mark used for passing E of Karang Galang, is Pulau Tanjungsau lighthouse, bearing 186°, or **Bukit Pelali** (1°24'N., 104°12'E.) on the Malay Peninsula, W of 000°.

A vessel will be clear of **Batu Betata** (1°11'N., 104°09'E.) when **Pulau Nongsa** (1°12'N., 104°05'E.) opens N of **Tanjung Babi** (1°12'N., 104°06'E.), bearing 279°, and may then shape course for Singapore Road or the China Sea.

The channel W of Karang Galang is used sometimes in preference to the channel to the E.

Pulau Tanjungsau Lighthouse (1°03'N., 104°10'E.), in range with the E end of Pulau Sau, bearing 173°, leads through nearly in mid-channel W of Karang Galang and E of **Batu Betata** (1°11'N., 104°09'E.).

At night, sufficient lighted aids exist to permit negotiation of Selat Riau at night with no untoward difficulty. Frequent cross bearings should enable the navigator to remain in the swept channel, which is more than 1 mile wide throughout, and to follow directions given above.

The **Tanjuk Range Lights** (0°57'N., 104°12'E.) indicate a course clear of dangers near the fairway in the N section of the strait.

Selat Riau from N, for vessels leaving Singapore at HW, or about the first quarter of the ebb or E current, and taking about 4 hours to reach the entrance of Selat Riau, will probably carry a fair tidal current through both straits, but no dependence can be placed on it.

The directions previously given for coming N, through Selat Riau, if reversed, will suffice for proceeding S. Deep draft vessels should pass E of Karang Galang.

8.42 Eastern Channel through Selat Riau can be used by small vessels proceeding through a swept channel in the S part of the E side of the strait. The least depth in the fairway of this channel is 6.9m.

Quarantine formalities should be carried out at **Sambu Road** (1°10'N., 103°53'E.) before arrival at **Tanjung Uban** (1°04'N., 104°13'E.).

Pilotage.—Pilots for **Sungei Kolak** (Kijang) (0°51'N., 104°36'E.) are embarked about 2 miles NW of the W end of **Setumu** (0°53'N., 104°27'E.). The pilot boat is reported to be a small black launch.

There is a port radio station at Tanjungpinang. There is frequent sea communication with Singapore. Kijang Airport is located 5.5 miles E of the town.

Anchorage.—There is good anchorage between **Gosong Thomas** (0°44'N., 104°35'E.) and Southwest Hill, about 4 miles W, in depths of 11 to 14.6m with shelter from N winds, but vessels should not anchor in depths of less than 9.1m, as within that depth the bottom becomes irregular.

Vessels may anchor SW of **Pulau Penyengat** (0°56'N., 104°25'E.) in about 6.4m with the whole of **Pulau Los**

(0°57'N., 104°25'E.) open W of Penyengat and the town pier open eastward of Penyengat.

The depths decrease gradually to the 5m curve, and the bottom consists of soft mud.

With S and W winds a considerable sea sets into the outer roadstead, and it becomes difficult to load or discharge cargo there. Toward the middle of the day, the wind generally goes down except in July, August, December, and January.

Anchorage is inadvisable W of the piers at Tanjung Uban because of poor holding ground in the vicinity, the existence of a telegraph cable in the area, and the fact that the line of range lights on **Tanjuk** (0°57'N., 104°12'E.) lies close to the Bintan coast here.

The usual anchorage for a large vessel is in about 25.6m, sand and good holding ground, with Pulau Tanjungsau light bearing 248° and the head of the N most pier bearing 008°.

Care must be exercised to anchor with a long scope of chain due to the strong currents in the channel.

There is safe anchorage in Teluk Sebung, in 7.3m, sand and mud, about 1 mile ENE of **Batu Senukuh** (1°09'22"N., 104°16'00"E.).

Caution.—Several shallow patches lie in **Selat Sendara** (0°44'N., 104°40'E.), between Pulau Telan and the Gin Islands but they all, except for **Terumbu Hendrik Jan** (0°41'N., 104°38'E.), lie out of the ordinary track of vessels, and are dangerous only in the event of this channel being mistaken in thick weather for the entrance to Selat Riau.

Vessels should give these islands a berth of 2 miles in passing and not bring **Pulau Teroti** (0°42'N., 104°47'E.) E of 080° until Southwest Hill on Pulau Mantang comes well open of Pulau Telan, bearing about 304°, or N of that bearing.

An obstruction lies about 2 miles SSW of the SW end of Pulau Penyengat.

Caution is necessary when docking at Tanjung Uban as a reef lies parallel to the dock, and an undercurrent frequently sets in the opposite direction to the main surface current.

North to Singapore Strait from Selat Bangka via Selat Berhala and Selat Durian—Alternate Inner Route

8.43 Tanjung Jabung (Djaboong) (1°00'S., 104°22'E.), the SW limit of the Inner Route, is conspicuous, and partly overgrown with trees. Like most other parts of the Eastern coast of Sumatera, it is low land, and is fronted by a mud bank to various distances, as charted. A light is shown from Tanjung Jabung.

Pulau Berhala (0°52'S., 104°24'E.) is a rocky island largely covered with high trees. Two bare peaks, each 91m high, rise on the W side of the island; the island is inhabited. It lies in the middle of Selat Berhala, nearly between Tanjung Jabung and Tanjung Buku, the SW end of Pulau Singkep. Except on the W side, the island is surrounded by a reef which dries at LW, and extends for a distance of 0.2 mile from the E side. A light is shown from Pulau Berhala.

Anak Berhala (0°51'S., 104°25'E.), a wooded islet, lies about 0.5 mile NE of Pulau Berhala.

Anchorage is available 0.5 mile N and W of Pulau Berhala in depths of 13 to 15m. If anchoring N of the island, care must be taken not to go too far to the E as a drying rock lies 0.4 mile N of the NE point of the island.

The channel N of Pulau Berhala has not been thoroughly examined and should be used with caution.

Several dangerous wrecks, best seen on the chart, lie NE of Tanjung Jabung and SW of Pulau Berhala.

Selat Berhala (Berhala Strait) (0°57'S., 104°24'E.), the channel S of Pulau Berhala, being generally free from danger, is consequently more frequented; the least depth charted is 6.9m. The shallow mud fronting the coast W of Tanjung Jabung extends some 4 miles N of **Berbak** (1°03'S., 104°14'E.), an island lying about 9 miles W of the point. It is steep-to beyond the 5m curve, and must be given a wide berth.

Pulau Singkep (0°30'S., 104°30'E.) forms the N side of the entrance to Selat Berhala, N of Pulau Berhala. The island's E portion extending E of **Tanjung Malang** (0°39'S., 104°30'E.) has been described in paragraph 8.3.

Teluk Baruk (Baroek Bay) (0°38'S., 104°26'E.) lies between Tanjung Malang and Tanjung Buku, the S extremities of Pulau Singkep. It is about 6 miles wide and 4 miles in length to its head from abreast the 10m curve, within which line the depths are reduced to 3.7m and less over the greater portion of it.

Tanjung Buku (0°41'S., 104°22'E.) has the prominent hill Gunung Buku, 137m high, on it. Bukit Porok, about 2.7 miles N of Tanjung Buku, has a sharp peak about 149m high.

Kepulauan Singkeplaut (Singkep Laoet Islands) (0°42'S., 104°28'E.), lying on a drying reef E of Tanjung Buku and fronting Teluk Baruk, consists of Pulau Keling, Pulau Tengah, Pulau Lalang, and Pulau Singkeplaut, as well as a few above-water rocks. A conspicuous tree is reported to stand on Pulau Singkeplaut.

The coast from Tanjung Buku to **Tanjung Sebayur** (Sebajoer) (0°29'S., 104°15'E.) trends NNW and NW for 14 miles; the latter point is on the E side of the entrance to Selat Sebayur, and is also the W end of Pulau Singkep.

Mentigi (0°30'S., 104°15'E.), on the S side of Tanjung Sebayur, is 110m high. Gunung Bidei, 209m high, lies 5 miles further E. Between Tanjung Buku and Tanjung Sebayur, above and below-water rocks extend up to 1 mile from the coast.

James Rock (0°39'S., 104°19'E.), a pinnacle with a least depth of 0.3m, lies 3.5 miles NW of Tanjung Buku.

8.44 Pulau Serak (0°40'S., 104°14'E.), a low and wooded islet, lies about 7 miles WNW of Tanjung Buku, it is located on a shoal, which, under the depth of 9.1m, extends 2 miles SE, 1 mile N, and about 0.7 mile off either side. Oekol (Pulau Ukol), located about 0.5 mile W of the S end of Pulau Serak, lies on this shoal, as do also several rocks, both awash and above-water.

Pulau Pengelap (0°37'S., 104°15'E.), low and wooded, lies about 2.7 miles NNE of Pulau Serak, on the E edge of a reef which is steep-to, extending 2 miles NW and 1 mile SE; the islet is surrounded by rocks and stones and is overgrown with vegetation. Shoal depths of 5.9 and 8.7m, lie, respectively, 2.3 miles W and 3.5 miles NW of Pulau Pengelap.

Pulau Alangtiga (0°31'S., 104°02'E.), 79m high, lying about 30 miles NW of Pulau Berhala, is the central of a group of three small, thickly wooded islands fringed by reef, and some rocks above-water.

Pulas Beralas (0°30'S., 104°02'E.), 69m high, lies about 1 mile N of Pulau Alangtiga.

Pulau Muci (Mubi) (0°32'S., 104°02'E.), 81m high, lies 1 mile S of Pulau Alangtiga. These islands may be passed at a prudent distance on their W side. A light, from which a racon transmits, is shown from Pulau Muci.

A small coral reef, with a least depth of 4m, lies 6.5 miles NE of Pulau Muci. Shoals, with depths of 5 and 10.1m lie, respectively, 1 mile ENE and 6.5 miles NNW of Pulau Muci.

Posik (0°23'S., 104°12'E.) is the central and principal island of a group which lies off the NW side of Pulau Singkep, and is separated by Selat Sebayur.

Other islands in the vicinity of Posik include Bandahara, Sempeng, **Rusukbuaya** (Roesoek Boeaja) (0°21'S., 104°09'E.), Nibung, Pajang, and Noja, as well as smaller islets and above and below-water rocks. The whole group is located on the same triangular reef, with boat passages between some of them; they are of little importance, and sparsely populated.

Pulau Silenseng (Pulau Silinseng) (0°18'S., 104°07'E.), nearly 3 miles NW of Rusukbuaya, consists of two islets connected by a reef, dry at LW; it is surrounded by a reef which extends about 0.5 mile from its W side.

A shoal, with a least depth of 7.3m, lies midway between Rusukbuaya and Pulau Silenseng. Another shoal, with a depth of 10m, lies 3 miles ENE of Pulau Silenseng.

Pulau Bunta (0°16'S., 104°07'E.), a small, wooded islet, lies 2 miles N of Pulau Silenseng and is surrounded by a reef which extends about 0.2 mile in places; it is steep-to beyond.

8.45 Selat Sebayur (Sebajoer Strait) (0°25'S., 104°15'E.), between the NW side of Pulau Singkep and the Posik group of islands, is a fairly good but narrow channel, requiring local knowledge or the assistance of a native pilot; it is entered from the S between Tanjung Sebayur and a flat that extends about 4 miles S of Bandahara, on which are some patches that dry.

Tanjung Irat (0°24'S., 104°16'E.), on the E side, is situated 5.5 miles N of Tanjung Sebayur. The strait is divided by a long, steep sandbank on the N point of which lie two rocks, named **Malang Bang** (0°24'S., 104°16'E.) which are only visible at LW; a patch that dries lies on the W elbow of the bank, about midway between the two points.

Both channels are navigable; the W is the broader of the two. The E, being straight, is stated to be the easier navigated.

About 1 mile S of Tanjung Irat is **Tjoekas** (0°26'S., 104°16'E.) and the river of that name, the bar of which is nearly dry at LW; it is used only by junks or boats.

Rapang (0°23'S., 104°16'E.), a small islet with a sharp, wooded hill, lies 1 mile NW of Tanjung Irat; near it is the narrowest part of the strait. A steep-to bank, as defined by the 5m curve, forms the W side of the channel. It extends about 5 miles SW from Rapang and joins the flat, described above, which extends S of Bandahara.

From **Tanjung Jabung** (1°00'S., 104°22'E.), the coast of Sumatera trends sharply to the W, forming the delta of the Djambi River and **Djambi Bay** (1°00'S., 104°00'E.); this coast is fronted by a mud bank which in places extends 5 miles off.

Djambi River (Batang Hari) (1°16'S., 104°05'E.), the largest river in Sumatera, has two principal mouths used by shipping, named **Kuala Berbak** (1°04'S., 104°12'E.) and **Kuala Niur** (1°01'S., 103°49'E.).

Vessels should not enter Kuala Niur without local knowledge; the buoys and beacons may be shifted in

accordance with the changes in the channel and therefore it is advisable to employ a pilot.

Pilotage in Kuala Niur is compulsory for vessels between **Muarasabak** (1°08'S., 103°51'E.) and **Djambi** (1°35'S., 103°37'E.). Requests for pilotage should be made at least 24 hours before arrival at Muarasabak.

The coast W of Kuala Niur is low and marshy; several streams of no importance to shipping run into the sea, and the coast is sparsely populated.

The entrance to Sungai Tungkal (Soengei Toengkal) is located about 24 miles NW of Kuala Niur.

Tanjung Labu (Tandjoeng Laboe) (0°47'S., 103°29'E.), the N point of the entrance, has a drying mud flat that extends about 2 miles off.

Sungai Retih (Rete River) (0°40'S., 103°25'E.) discharges by four mouths, 8 to 12 miles NW of Tanjung Labu.

These mouths are formed by three islands; the middle and largest is **Pulau Kijang** (Kidjang) (0°40'S., 103°21'E.). Off these mouths the 5m curve is 6 miles from the coast, and the channels which lead to them are between or over drying mud banks extending to the E from the islands; there is not more than 1.2m at LW.

Selat Indragiri (Indragiri River) (Batong Kwantan) (0°20'S., 103°18'E.) penetrates in its upper reaches far into the Padang uplands.

Its principal mouth is the **Kuala Lajau** (0°25'S., 103°36'E.), which is the most serviceable channel for larger vessels.

Vessels with a maximum length of 60m and a maximum draft of 4m can be taken across the bar of the Kuala Lajau; this depth can be maintained for about 30 miles upriver. An abandoned customs station stands on the S side of the entrance to Kuala Lajau; a village, built on piles, stands on the N side.

Teluk Kualacenaku (Amphitrite Bay) (0°08'S., 103°42'E.) is about 20 miles wide between **Tanjung Bakau** (0°20'S., 103°47'E.) and **Tanjung Dato** (0°00', 103°49'E.), a low headland, and about 17 miles long to the mouth of the several rivers of which it is the estuary. The coast is everywhere low and marshy, and the greater portion of the bay is very shallow.

The coast affords no conspicuous landmarks, being completely overgrown by trees, which are all of one kind.

Vessels approaching the bay from the E, when Tanjung Dato or Tanjung Bakau are not visible, may be set considerably N or S by the tidal currents; these tidal currents may attain a rate of 2.5 knots.

The outer edges of the mud banks extending from the entrance points of the bay are steep-to, having depths of 18.3 to 20.1m within 0.5 mile of the 5m curve in places; these mud banks should be given a wide berth. Fishing enclosures may be seen on the shallow banks in various parts of the bay.

From Tanjung Dato the coast trends N for 11.5 miles to the SE end of **Kateman Island** (0°16'N., 103°41'E.), which is about 13 miles long in a NW and SE direction, and is separated from Sumatera by Selat Pedada, the mouth of which is about 64m wide and dry at LW.

The entrance to **Sungai Kateman** (0°21'N., 103°37'E.), which lies at the NW end of Kateman Island, is entered between Tanjung Jongkir and the coast of Sumatera; however, this river is of no importance to general shipping.

Pulau Burung (Boeroeng) (0°26'N., 103°34'E.), 4 miles NNW of the entrance of Sungai Kateman, is low, wooded, and

separated from the Sumatera coast by a narrow channel; a drying bank extends from 1 to 2 miles from the ends of the island. Kateman Island and Pulau Burung are difficult to distinguish from offshore.

An obstruction was reported to lie about 4 miles ENE of the SE extremity of Pulau Burung.

On the E shore, **Pulau Selayar** (Selajar) (0°18'S., 104°26'E.) is about 6 miles long, E and W, and 2.5 miles wide.

It lies between Pulau Singkep and Pulau Lingga, dividing the passage into two channels, named Selat Penuba and Selat Lima. A reef extends about 1 mile SE of Penuba, a village at the SE end of Pulau Selayar. A hill rises to a height of 300m on the W side of the island.

Selat Penuba (Penoeba Strait) (0°20'S., 104°26'E.) is deep, but is obstructed at its W end and is not used by shipping.

Tengah Islet (0°20'S., 104°31'E.), about 30m high, is situated on a reef in the E fairway of Selat Penuba, about 1 mile SE of the E point of Pulau Selayar.

Serang Islet (0°21'S., 104°31'E.), about the same height as Tengah, lies about 1 mile SE, just within the 5m curve off the S side of the strait.

8.46 Selat Lima (Lima Strait) (0°16'S., 104°26'E.), between the N side of Pulau Selayar and the S coast of Pulau Lingga, is a deep channel; parts of the shores are steep-to.

Pulau Pandan (0°15'S., 104°21'E.), a wooded mass of ironstone, lies off the W entrance of Selat Lima. Sunken rocks extend about 0.2 mile S and E of the islet; otherwise the water around it is deep.

Kepulauan Lima (0°16'S., 104°27'E.), lying nearly in the middle of the strait, consists of Yu, Panjang, Buntar, and Lima; they are hilly and wooded. Only Lima is inhabited.

About 0.5 mile ENE of Lima is a small, low, stony cay, which is overgrown with brushwood, and is steep-to.

Tanjung Labuandadong (0°12'S., 104°25'E.), the NW point of the entrance to Selat Lima, is fairly steep-to; Pulau Labuandadong lies close off the point.

Entering Selat Lima from W, pass on either side of Pulau Pandan and to the N of Kepulauan Lima, taking care to avoid the cay ENE of Lima.

The cay, in range with Tanjung Labuandadong bearing 305°, astern, leads SW of the reef extending SW of **Tanjung Bliung** (0°16.5'S., 104°31.5'E.).

The W coast of Pulau Lingga trends N about 2.25 miles from Tanjung Labuandadong to **Tanjung Datuk** (Datok) (0°11'S., 104°25'E.); the latter point is very conspicuous, and from it the coast trends NNE for 12 miles to Selat Dasi.

Pulau Pulon (0°09'15"S., 104°27'00"E.) lies about 2 miles NE of Tanjung Datuk; the islet is prominent with a sharp peak.

Selat Dasi (Dasi Strait) (0°00'30"N., 104°29'30"E.) is a passage 4 miles long, separating Pulau Lingga from Pulau Bakung N of it. There are several islets and rocks in the fairway of the strait, and it is only available to vessels with local knowledge.

Pulau Bakung (Bakong) (0°06'N., 104°26'E.) lies close to the NW end of Pulau Lingga, from which it is separated by Selat Dasi, and has some fairly high hills. The SW coast of the island trends in a NW direction, the shore being fronted to a short distance by a reef.

Close to the NW extremity of Pulau Bakung lie a number of islets and reefs, extending about 8 miles NW, of which **Karoti** (0°13'N., 104°19'E.) is the NW most.

The space between that island and **Pangele** (0°09'38"N., 104°24'07"E.), the N end of Pulau Bakung, is blocked by islets and reefs.

Pulau Cempah (Tjempah) (0°09'N., 104°19'E.) is irregularly shaped, hilly and about 5 miles long and 2 miles wide. It is separated from the NW part of Pulau Bakung and **Blandok Besar** (0°11'N., 104°20'E.) and **Karoti** by **Selat Cempah** (Tjempah Strait) (0°09'N., 104°20'E.), 2 miles wide, which has general depths of about 24m.

Pulau Cempah is fairly steep to on its E and SE sides; the summit of the island, 116m high, is to be found in its N part.

8.47 Pulau Laut (0°11'N., 104°17'E.) lies close NW of the N end of Pulau Cempah, and **Pulau Gentong** (0°09'N., 104°17'E.), fringed by a reef, lies near the NW side of Pulau Cempah.

Pulau Buaya (Boeaja) (0°11'N., 104°13'E.) lies about 3 miles W of Pulau Cempah; in the channel separating them are several islets which can best be seen on the chart.

Pulau Buaya has the shape of an alligator when seen from the N; it is surrounded by a narrow reef. The summit of the island, located in its SE part, rising to a height of 228m, has been seen in clear weather at a distance of 30 miles.

Pulau Sikeling (Si Keling) (0°08'N., 104°14'E.), 91m high and about 1 mile long, lies 1 mile S of Pulau Buaya.

Blanding (0°09'N., 104°12'E.) lies about 1 mile NW of Pulau Sikeling; it is the S of three islands situated on a reef that extends about 4 miles NW.

Lobam (0°10'N., 104°11'E.), 84m high, lies on the N part of this reef. Turka lies between Blanding and Lobam.

The Temiang group of islands, with the other islands and dangers between Pulau Buaya and the Merodong Islands, lie far to the E of the usual track of vessels bound through Selat Durian. This group is composed of four large and several small islands, lying to the NW of Pulau Bakung and Pulau Sebangka, and separated from those islands by a narrow channel, which appears to be obstructed by rocks, best seen on the charts.

8.48 Pulau Temiang (0°20'N., 104°23'E.), the largest and northernmost of the group, is 7.5 miles in length, 3 miles in breadth, and irregularly-shaped, with the NE side being nearly straight; at the NW end there is a deep inlet, and there is also one at the SE end; in the latter there are two small villages.

This island is mostly composed of high hills, and near the W end on some tableland is Mount Benaya, with three tops close together, the middle one being 224m high. Mount Piang, with two conspicuous peaks, is on the S portion of the island; the ridges of hills on the NE side are 156 to 174m in height.

The three other principal islands, which lie close SW and W of Pulau Temiang are Pulau Batang, Pulau Benku, and Pulau Saga. An isolated 195m high hill stands on the NW end of Pulau Batang.

Middle Rock (0°20'N., 104°27'E.), which dries and generally breaks, lies in the SE entrance of Selat Temiang, about 1.7 miles NE of the E extremity of Pulau Temiang. It is

generally marked by tide rips and may be passed on either side, but it is preferable to pass to the N.

Ompak (0°15'N., 104°19'E.), 66m high, about 2 miles SW of Pulau Saga, is the largest of the chain of islets and reefs running roughly parallel to the SW coast of Pulau Saga. The chain extends for about 1.2 miles SE and 0.75 mile NNW.

A rock, with a depth of less than 2m, was observed to lie 1 mile S of the S extremity of Ompak and was marked by a mast.

8.49 Pintu (Pintoe) (0°23'N., 104°19'E.), 125m high, lies close off the NW end of Pulau Temiang; beyond it is **Kebab** (0°23'N., 104°18'E.), 65m high.

Pompong (0°22'N., 104°15'E.) lies about 2.25 miles WSW of Kebab; it is about 0.5 mile in diameter, is surrounded by a reef, and has a 124m high hill in its center. An above-water rock, surrounded by a reef lies 1 mile SE of the island; an isolated reef lies 0.4 mile S of the SE extremity of the island.

Dua (Doea) (0°24'N., 104°22'E.), situated about 3 miles E of Pintu, lie at the junction of Selat Merodong and Selat Temiang. They are two islands, each circled by a reef extending 0.25 mile from the shore in places. The S island, the higher of the two, rises to 35m.

The Titaman group of islands, situated NW of the Merodong group, occupies an oval space about 6 miles in length, E and W, and nearly 5 miles in breadth.

It comprises several islands, islets, and rocks, which are separated from each other by narrow channels which are obstructed by reefs.

Titapan (0°27'N., 104°23'E.), the SW island and most conspicuous of the group, is rocky on its N and S sides and has two hills; the N hill is sharp and 108m high.

Benan (0°29'N., 104°27'E.) and **Katanglingga** (0°30'N., 104°25'E.) form the E limit of the group. A 5.5m patch, which is steep-to, lies about 0.4 mile SW of Titapan.

Selanga Islets (0°30'N., 104°21'E.), three in number, lying on the SE of Selat Pengalap, are small but elevated and conspicuous; the S islet is 35m high. With an opposing wind and current, a troublesome sea may arise in this area.

The Pangelap group of islands separates Selat Pangelap from Selat Abang.

8.50 Alor Islands (0°28'N., 104°18'E.), the southernmost of the Pengalap group, consist of some rocky islets lying on a reef; the S most islet is 46m high.

Pengalap (0°30'N., 104°17'E.), the largest of the group, is about 3.3 miles long, N and S, 0.5 mile wide, wooded, and moderately elevated, attaining a height of 80m in the N part; the island is fringed by a reef, which projects in places on the E coast to a distance of 0.25 mile, but on the W coast to a less distance.

Udiep (Oediep) (0°32'N., 104°18'E.), an islet 39m high, thickly wooded, and surrounded by a reef, lies about 1.3 miles E of the N end of Pengalap, and in the channel of Selat Dempo.

Dedap (0°30'N., 104°16'E.), about 2 miles long, NW and SE, and about 0.3 mile wide, lies about 1 mile W of Pengalap.

Sawang Islets (0°30'30"N., 104°14'45"E.) lie in Selat Abang, about 0.5 mile NW of Dedap.

Off **Pulau Mutyi** (0°32'S., 104°02'E.) the prevailing winds cause great irregularity in the tidal current; the rate was observed to be 2 knots.

Outside **Teluk Kualacemaku** (0°08'S., 103°42'E.) the flood current sets to the S and ebb to the N.

In the bay, to about 4 miles from the shore, the flood sets to the W, S of **Tanjung Datuk** (0°00', 103°49'E.), and continues from S to SW between **Pulau Busung** (Boesoeng) (0°08'S., 103°36'E.) and **Pulau Jawang** (Tjawang) (0°06'S., 103°33'E.) into **Batang Toeaka** (0°12'S., 103°27'E.), but S of Pulau Busung this current sets SW into **Batang Terboeng** (0°17'S., 103°29'E.).

The flood also sets SW, or on to the NE edge of the 5m curve, 9 miles S of Tanjung Datuk. The ebb from abreast Pulau Busung sets to the N and then continues to the E along the coast to the S of Tanjung Datuk. In the middle of the bay the ebb sets to the E. The greatest rate of the tidal current observed was 3 knots.

In **Selat Lima** (0°16'S., 104°26'E.) the flood sets W and the ebb E. On the W coast of Pulau Singkep and Pulau Lingga the flood current runs to the S and W and the ebb to the N and E, but near the SW coast of Pulau Singkep between **Tanjung Buku** (0°41'S., 104°22'E.) and **Tanjung Sebayur** (0°29'S., 104°15'E.) the flood sets N as an eddy and the ebb S at the rate of 1.75 knots. The greatest rates of the tidal currents observed were, as follows:

1. Near **Pulau Mutyl** (0°32'S., 104°02'E.) and at the Pulau Alangtiga—1.75 knots, with the flood setting S and the ebb setting N.
2. Selat Sebayur—2.25 knots.
3. Selat Penuba and Raja Bay—0.25 knots.
4. Selat Lima—1.5 knots.
5. South coast of Pulau Lingga—1.75 knots, with the flood setting W and the ebb setting E.

In Selat Dasi, the tidal currents run at a rate of 4 to 5 knots, with the flood setting to the W.

In Selat Cempah, the flood current sets N and the ebb S.

8.51 Depths of 5.5m and 5.9m lie as far as 12 miles SE and 13 miles SSE of **Tanjung Jabung** (1°00'S., 104°22'E.), in positions as far as 6.75 miles offshore. A 10.1m patch lies 7 miles NE of the same point.

A wreck, with 6.9m, and a wreck, with 9.6m, lie 5.75 and 10 miles ENE, respectively, of Tanjung Jabung; a dangerous wreck exists about 18 miles SE of the same point.

A reef, numerous rocks, islets, and depths under 9.1m, which can best be seen on the chart, surround **Pulau Berhala** (0°52'S., 104°24'E.). An 8.7m patch lies 2 miles SE of Pulau Berhala; a 5.5m shoal lies 1.25 miles NW of the same island.

A 9.6m shoal lies 5.5 miles SE of the light shown on the S most islet S of Pulau Berhala.

Middle Rocks (0°48'S., 104°26'E.), partly dry at LW, lie 3.75 miles NE of Pulau Berhala; a small rock, with 3.7m of water, and steep-to, is located about 0.3 mile NW of Middle Rocks. Another rock is reported to lie a considerable distance E of Middle Rocks, but its position has not been determined.

Pollux Rocks (0°48'S., 104°28'E.), consisting of two heads, nearly awash at LW, and steep-to, lie in an E and W direction, 0.2 mile apart. The E rock is located about 2 miles NE of Middle Rocks. They are not distinguishable by breakers, but only by ripples during the strength of the tidal currents.

A stranded wreck 0.4 mile S of the E of the two Pollux Rocks is reported to be conspicuous.

Sikh Shoal (0°46'S., 104°11'E.), with a depth of 4.6m, lies about 15 miles WNW of Pulau Berhala light. To the S of this shoal are depths of 7.8m and 9m. A partially submerged wreck is reported to lie about 8.7 miles W of Sikh Shoal.

Karang Speke (Speke Rock) (0°37'S., 104°06'E.) lies 8.5 miles WNW of the N end of Pulau Serak; it is circular, about 91m in diameter, and dries. The rock is marked by a lighted beacon. A 5.5m shoal lies about 5 miles WSW of the rock.

Tanjung Buku (0°41'S., 104°22'E.), in range with Pulau Serak bearing 100°, leads S of Karang Speke.

Pulau Muci (0°32'S., 104°02'E.) bearing 330° leads W of Karang Speke.

Atkin Rock (0°33'S., 104°02'E.), 1 mile ESE of Pulau Muci light, is a small pinnacle, circular in form, about 27m in extent, which dries and is steep-to; when covered, unless the tidal current is running strongly, there is no indication of it.

Two wrecks lie stranded in a position about 5 miles NW of the W entrance to **Kuala Berbak** (1°04'S., 104°12'E.).

A dangerous wreck, position approximate, with a mast showing, lies about 8 miles NNW of **Tanjung Solok** (1°00'S., 103°49'E.), the W entrance point of Kuala Niur.

8.52 Karang Cuhoorn (0°26'S., 103°41'E.), a narrow drying bank about 2 miles long, lies on the bar across the mouth of Kuala Lajau. A dangerous wreck, position approximate, lies E of Karang Cuhoorn and is best seen on the chart. The wreck of a sailing vessel with part of the mast showing lies about 11 miles NNE of **Tanjung Bakau** (0°20'S., 103°47'E.).

The W end of **Selat Penuba** (0°20'S., 104°26'E.) is obstructed by a bar over which there are depths of 4 to 5.8m about 2 miles SSE of the W end of Pulau Selayar. Sunken rocks extend about 1 mile NW of **Pelang** (0°21'S., 104°26'E.).

A beacon marks the outer rock, which has a depth of 0.9m. Because of the numerous obstructions in Selat Penuba, Selat Lima, N of Pulau Selayar, is preferred.

A bank, with depths of less than 9.1m, lies offshore between **Tanjung Labuandadong** (0°12'S., 104°25'E.) and Tanjung Dato; there is a least depth of 4.6m on the N part of the bank.

A 6.8m patch lies about 8.7 miles NNE of **Tanjung Datuk** (0°11'S., 104°25'E.); depths of less than 9.1m extend about 2 miles NNW of this patch. A 7.7m patch lies about 0.8 mile E of the above patch; there are patches of 9.1m, steep-to and best seen on the chart, near Selat Dasi.

Depths of 0.5 to 9.2m extend about 2 miles W of the SW part of **Pulau Cempah** (0°09'N., 104°19'E.).

Leda Rock (0°11'30"N., 104°09'45"E.), with very little water over it, and steep-to, lies about 1.2 miles NW of **Lobam** (0°10'N., 104°11'E.); another rock, awash, is situated between them. Near these reefs there are reports of strong tide rips.

A rock, with a depth of less than 1.8m, was reported (1972) to lie about 1 mile S of the S end of **Ompak** (0°15'N., 104°19'E.).

A dangerous wreck, with its mast showing, lies about 2.2 miles S of **Pulau Pompong** (0°22'N., 104°15'E.).

8.53 Batu Belayar (0°25'N., 104°16'E.) lies 2.5 miles NNE of the N end of Pulau Pompong, and consists of two rocks several feet high, a rock awash lies 0.25 mile to the W.

A dangerous wreck is reported to lie about 2.5 miles ENE of Batu Belayar.

A small reef, with a depth of 2.7m, lies about 1 mile SSE of the **South Dua** (0°24'N., 104°22'E.) nearly in the middle of Selat Temiang. This reef is probably not marked by breakers or discoloration and was struck by a vessel many years ago.

A 10.1m patch is reported to lie about 0.6 mile NW of North Dua Island. A reef of stones and coral having an islet at its S end and an above-water rock at its N end, is located about 1.2 miles NW of North Dua Island. There are often heavy tide rips in the channel between them. A rock awash lies close NE of the reef.

Close N of this reef is another similar reef on which **Boom Rock** (0°25'45"N., 104°20'15"E.) is located. This rock is 4.3m high, bare, and prominent.

A coral patch, with a depth of 5.5m, and from 20.1 to 25.6m around, lies 1 mile NW of Boom Rock, and on the E side of Selat Pengelap. Other shoals are reported in this area. Caution is necessary when navigating in the vicinity.

Daleh Islet (0°25'30"N., 104°24'30"E.), surrounded by a reef, lies 1 mile S of Senimpan and on the N side of Selat Merodong.

Drying reefs, usually marked by tide rips or surf, lie 0.3 mile SE and 0.6 mile SW, respectively of Daleh.

A rock, above-water, lies on the reef 0.2 mile N of the N **Selanga Islet** (0°30'N., 104°21'E.). A large white rock, above-water, on a reef which dries at LW, lies between the S Selanga Islet and **Tokong** (0°29'N., 104°23'E.), which is 68m high.

A patch of 6.9m is charted off the E coast of **Pulau Pengelap** (0°37'N., 104°15'E.); an above-water rock lies 0.2 mile off the S end of the island.

About midway between the Selanga Islets and the center of Pulau Pengelap is **Midden Rock** (0°30'N., 104°20'E.), a rock awash at LW, with depths of 14.6 to 20.1m around, lies 2.5 miles ENE of the S end of Pengelap, not always marked by tide rips.

Two shoal spots of 10.1 to 11m lie 3.5 and 4.5 miles, respectively, SSW of Pengelap.

Midway between Midden Rock and the **Alor Islands** (0°28'N., 104°18'E.) to the S is a patch with a depth of 4.9m.

Three rocks above-water are situated on the reef extending 0.5 mile SE of **Dedap Island** (0°30'N., 104°16'E.). Detached rocks, dry at LW, lie about 0.6 mile SE of the reefs; these rocks are generally marked by tide rips.

Passages Leading from Outer Route and Selat Riau into Selat Durian and Selat Berhala

8.54 The navigation of these channels should present no difficulties. The flood current runs W and the ebb E in the directions of the channels, and is somewhat affected when passing wide openings.

Selat Temiang (Tamiang Strait) (0°22'N., 104°23'E.), the S most of the four wide and deep channels leading from the outer route to Selat Durian and other straits adjacent, is about 14 miles in length, NW and SE, and 2 miles in breadth at its narrowest part; on its S side are the islets off the NW end of Pulau Sebangka. In the strait, the flood current sets NW and the ebb current sets SE.

Selat Merodong (Merodong Strait) (0°26'N., 104°27'E.), between Pulau Mesanak and the Merodong group of islands on

the S and the Titampan group on the N, is also navigable. It has a general depth of 22m over a fairway, with a minimum breadth of about 2 miles abreast **Daleh Islet** (0°25'30"N., 104°24'30"E.).

Selat Merodong is continued NW between Tiampan group of islands, and the **Dua Islands** (0°24'N., 104°22'E.), and **Boom Rock** (0°25'45"N., 104°20'15"E.) abreast that group, joining Selat Pengelap. Selat Merodong connects Selat Temiang between Dua Islands and Medang islands. Both channels are deep in their fairways.

Batu Belayar (0°29'N., 104°16'E.), well open S of the islet lying NW of the N Dua island, bearing 270°, leads in the fairway of Selat Merodong.

In Selat Merodong, the flood current sets W and the ebb current sets E.

Selat Pengelap (Pengelap Strait) (0°29'N., 104°20'E.) is bordered on the E by the Tiampan group and **Selanga Islets** (0°30'N., 104°21'E.), and on the W by the Alor Islands and the sunken dangers E of Pulau Pengelap.

It is not less than 1.5 miles in width in the main fairway, with depths of 22 to 55m.

In Selat Pengelap, owing to the uneven nature of the bottom, the currents, near springs, cause eddies and overfalls which are somewhat alarming to strangers, but no dangers, other than those charted, are known to exist.

The flood current runs S, and meets the currents from Selat Temiang and Selat Merodong near **Kebat Island** (0°23'N., 104°18'E.).

Selat Abang (Abang Strait) (0°32'N., 104°16'E.) is reduced by the rocks extending from **Sepintu Islet** (0°31'22"N., 104°14'21"E.) and Sawang Islets to a breadth of about 0.7 mile, with a fairway depth of 22m. In the strait, the flood current sets W and the ebb current sets E.

Pulau Abang-Kecil (Abang-Ketjil) (0°33'N., 104°14'E.), forming the N side of Selat Abang, is hilly and about 1.3 miles in extent.

8.55 Nijur Islets (0°32'N., 104°15'E.), four in number and surrounded by reefs, lie nearly 1 mile from the E side of Pulau Abang-kecil.

Sepintu Islets (0°31'23"N., 104°14'15"E.), on the N side of Selat Abang are two wooded rocks on the same reef.

Sawang Islets (0°30'30"N., 104°14'45"E.), on the S side of Selat Abang and located about 0.5 mile NW of Dedap, are two wooded islets lying NE and SW from each other and connected by a reef.

Pulau Abang-Besar (0°35'N., 104°12'E.), 90m in height, 4 miles long, N and S, and 2.5 miles wide, is hilly, thickly wooded, and situated NW of Pulau Abang-Kecil.

The channel between is contracted near the center to 183m or less by a low island near Pulau Abang-Besar; it is used only by native canoes.

Pulau Tortel (0°35'N., 104°11'E.), steep-to, lies about 0.3 mile off the W side of Pulau Abang-Besar.

Batu Hipomenes (Hipomenes Rock) (0°35'N., 104°09'E.), with 1.5m, lies about 1.3 miles W of Pulau Tortel.

Karang Kameleon (0°31'N., 104°08'E.), a small rock, awash, lies about 5 miles SW of Pulau Abang-Besar. A bank, with a least depth of 7m, extends about 0.5 mile N of this rock.

The summit of Pulau Petong bearing 348° or greater leads well to the W of Karang Kameleon.

Pulau Petong (0°38'N., 104°05'E.), lying 6 miles WNW of Pulau Abang-Besar, has several hills, one of which, the summit, at the S end, is 154m high.

Several islets and rocks extend about 0.75 mile from the SE side of Pulau Petong; the outer rock is **Observation Rock** (0°36'N., 104°06'E.).

A 5.5m shoal was reported to lie about 0.8 mile SSE of the SW end of Pulau Petong.

Above and below-water rocks also extend 1 mile W of Pulau Petong.

Pulau Anakpetong (0°38'N., 104°02'E.), two islets on a reef nearly 1 mile in extent, lie 2.5 miles W of Pulau Petong; the E of these islets is 57m high, the W islet is lower.

Cucupetong (0°39'N., 104°01'E.), about 19m high, lies nearly 1.5 miles WNW of Pulau Anakpetong.

Caution.—In Selat Abang, there is no safe passage between the Sawang Islets and Dedap.

8.56 Selat Dempo (0°38'N., 104°13'E.), about 7 miles long, NW and SE, and 3 miles wide, lies between the Abang islands and **Pulau Galang Baru** (0°40'N., 104°16'E.) to the NE, and affords easy navigation.

The channel between Pulau Abang-Besar and Pulau Petong is the best route for vessels proceeding W to Selat Durian, well S of **East Bank** (0°41'N., 103°52'E.) or if bound S to Selat Berhala.

Selat Durian (0°45'N., 103°37'E.), entered from the S between **Great Durian** (0°43'N., 103°43'E.) and **Pulau Sanglang Besar** (Sanglang-besar) (0°37'N., 103°41'E.), is nearly 4 miles wide, and bounded on either side by a number of islands of various sizes. It has a NW direction in the S part, then turns toward the N and E between **Pulau Buru** (0°53'N., 103°30'E.) and **Pulau Mantaras** (0°52'N., 103°37'E.); the Kepulauan Rukan lie in its S approach, and may be passed on either side.

The strait is available at all times for all classes of vessels, being deep and well-lighted.

The main channel of Selat Durian has been wire-dragged to a depth of 14m. The channel S and W of Rukan Selatan has been wire-dragged to a depth of 14m; the channel SE of Rukan Selatan has been wire-dragged to a depth of 11.9m.

8.57 Kepulauan Rukan (0°35'N., 103°47'E.), consisting of three islands named Rukan Selatan, Rukan Tengah, and Rukan Utara, extends over a distance of 5 miles, N and S.

Rukan Selatan (South Brother) (0°33'N., 103°46'E.), 43m high, the largest and highest of the Kepulauan Rukan, is situated in the S approach to Selat Durian; it is 1 mile long, N and S, and about 0.3 mile wide, and may be seen from a distance of 17 to 18 miles in clear weather.

Rukan Tengah (Middle Brother) (0°35'N., 103°46'E.), 47m high, lies about 1.3 miles N of Rukan Selatan.

Rukan Utara (North Brother) (0°37'N., 103°46'E.), 24m high, is a wooded rock, lying about 3 miles N of Rukan Tengah. A light is shown from a 22m high tower on the S hill of Rukan Selatan; a wide cliff on the NE side makes the island conspicuous at times. A light is also shown from Rukan Utara.

Caution.—Many dangerous wrecks, best seen on the chart, lie in the vicinity of Kepulauan Rukan.

East Bank (0°41'N., 103°52'E.), ridges of hard sand, with depths of 2.3 to 9.1m, lie E of Kepulauan Rukan; they are not marked by surf or discoloration.

The shoalest part of the W ridge, with a depth of 4.1m, lies about 5 miles ENE of Rukan Utara. The ridges are best seen on the chart.

Durai Islands, several low mangrove islands, lie with their S extremity about 4 miles NE of Pulau Burung, near the coast of Sumatera.

8.58 Pulau Sandam Laut (0°28'N., 103°40'E.), the southeasternmost of the group, is small, 32m high, and surrounded by rocks.

Pulau Durai (Doerai) (0°31'N., 103°36'E.), the largest of the group, lies 3 miles NW of Pulau Sandam Laut; it is 4.5 miles long and rises to a height of 71m near its N end.

Numerous other islands, which can best be seen on the chart, lie E of Pulau Durai and form the W side of Southeast Channel.

Pulau Segal Besar (Segal-besar) (0°34'N., 103°40'E.), on the E side of Southeast Channel, is 1.5 miles long and 36m high; numerous islands, which can best be seen on the chart, lie NW of Pulau Segal-besar.

Southeast Channel (Alur Pelayaran Tenggara) (0°34'N., 103°39'E.), which lies between the Durai group of islands and Pulau Segal-besar, can best be seen on the chart; these passages should only be used by vessels with local knowledge during daylight.

Pulau Sanglang Besar (Sanglang-besar) (False Doerian) (0°37'N., 103°41'E.), an irregularly-shaped island with a peak 159m high, is thickly wooded and about 3 miles in extent, and with adjacent islands forms the SW limit of Selat Durian.

Pulau Sanglang-kecil (Sanglang-Ketjil) (0°36'N., 103°43'E.), nearly 1 mile long, E and W, is 65m high, and separated from the SE side of Pulau Sanglang Besar (Sanglang-besar) by a narrow channel.

Richardson Reef (0°37'N., 103°43'E.), a small reef with a depth of 5m, lies about 1 mile N of the SE end of Pulau Sanglang-kecil.

8.59 Pulau Timun (0°38'23"N., 103°37'45"E.), the northernmost of four islands lying W of Pulau Sanglang Besar, is 46m high; the W peak of **Pulau Kas** (0°37'N., 103°39'E.) is 49m high.

Pulau Peropos (0°40'N., 103°35'E.), 124m high, and **Pulau Ngai** (0°41'N., 103°35'E.) lie about 6 miles WNW of Pulau Sanglang Besar (Sanglang-besar).

A number of islets extend S of Pulau Peropos, nearly to the Durai group, and form the W side of the N approach to Southeast Channel.

Pulau Durian Besar (Great Durian) (0°43'N., 103°43'E.), on the N side of the fairway of Selat Durian, is a triangular-shaped island, nearly 4 miles in extent; it is mountainous, and Djora Peak, near its center, is 309m high. The SW side of the island is fairly steep-to.

Tiga (0°41'N., 103°44'E.), comprised of three rocky islets surrounded by reefs, lies about 0.5 mile S of the S end of Pulau

Durian Besar. Carnbee Reef, a drying steep-to coral reef, lies about 0.5 mile SW of Tiga.

Pulau Durian Kecil (Little Durian) (Little Doerian) (0°44'N., 103°40'E.), 171m high, and 2 miles long, is separated from Pulau Durian Besar by a narrow channel in which there are three islets.

South Passage Island (Pulau Perasi Besar) (0°43'N., 103°39'E.), lying about 0.5 mile SW of Pulau Durian Kecil, is bare and 66m high. It can be passed fairly close.

Perasi Island (Pulau Perasi Kecil) (North Passage Island) (0°46'N., 103°38'E.), 46m high, lies about 3 miles NNW of South Passage Island; both of these islands lie on the E side of the fairway of Selat Durian.

Pulau Pelangkat (0°45'N., 103°35'E.) lies about 3 miles WSW of Perasi Island, on the W side of the fairway and is marked by a light. It is low, partly inundated at HW, of coral formation, covered with trees, the tops of which are about 30m above HW, and has a round and conspicuous appearance.

8.60 Selat Sanglang (0°44'N., 103°42'E.), the strait lying N of Pulau Durian Besar and Pulau Durian Kecil, may be considered as one of the S entrances to Selat Durian.

It does not offer any advantages to vessels to proceed through it, but, on the contrary, is inferior to and less direct than the main strait. Three islands, with **Moro Laut** (0°46'N., 103°40'E.) being the westernmost, form the N side of the W end of Selat Sanglang.

Pulau Sugibawah (Soegi Bawah) (0°47'N., 103°48'E.) lies N of Selat Sanglang and Pulau Durian Besar; it is about 6 miles long, NW and SE, and about 2 miles wide at the S part, narrowing to 0.5 mile near the N end.

There is a range of hills on the N portion of the island which attain an elevation of 145m. The W coast is low and consists in a great part of morass on which are mangrove bushes. A low islet lies close SW of the N end of the island.

Pulau Belukar (Beloekar) (0°50'30"N., 103°39'30"E.) lies about 0.4 mile from the N end of Pulau Sugibawah; it is about 0.7 mile long. A steep-to drying reef lies about 1.2 miles W of the S end of the island.

Pulau Pandjang (Pulau Panjang) (0°51'N., 103°41'E.), about 2 miles E of Pulau Belukar, is hilly, about 4 miles in length, and 0.5 mile in breadth. The hills at the N end rise to a height of 104m; the hills at the S end rise to a height of 135m.

Pulau Itik (0°53'N., 103°39'E.) consists of two small, round, overgrown islets, 50m high, lying about 1 mile NW of Pulau Pandjang. Itik Reef, which dries, lies about 1 mile NW of Pulau Itik.

A dangerous wreck lies 0.7 mile WNW of the reef, while a 5m coral patch lies about 3.7 miles NNE of the reef.

The summit of Perasi Island, in range with the E side of Pulau Mantaras, bearing 179°, leads W of Itik Reef.

Pulau Mantaras (0°52'N., 103°38'E.), lying 1.5 miles SW of Pulau Itik, is about 0.4 mile in diameter, covered with trees, and 75m high; it should be visible from a distance of 15 miles in clear weather, and is conspicuous on account of its reddish-colored rocks rising almost perpendicularly from the sea.

Mantaras-Kecil (0°52'38"N., 103°37'22"E.), nearly 0.3 mile NNW of Pulau Mantaras, is a rocky islet with trees and is fringed by a drying reef.

8.61 Melvill Reef (0°52'N., 103°37'E.), a drying reef marked on its W side by a light, lies about 0.5 mile WSW of the W end of Pulau Mantaras. Middelburg Reef a drying coral reef also marked by a light, lies about 3 miles W of Melvill Reef.

The summit of Pulau Sanglang Besar (Sanglang-besar), in range with the summit of Perasi Island, bearing 159°, leads in the fairway of Selat Durian between Melvill Reef and Middelburg Reef.

The N group of the Karimun Islands has been described in paragraph 5.16. These islands are situated on the W side of Selat Durian, and separated from each other by narrow channels with varying depths. Some of these islets are hilly and others are low. Most of these islands are inhabited, and a representative of the native self-government resides on the SW side of Pulau Buru.

Pulau Kundur (Koendoer) (0°45'N., 103°26'E.), the largest of these islands, is about 16 miles long, N and S, and 10 miles wide; its coasts are low and marshy.

Gading, 141m high, is located on the S end of the island; Salah, which is 101m high, is located on the N end of the island.

Pulau Ungar (Onggoet) (0°40'N., 103°30'E.), separated from Pulau Kundur by a channel about 0.5 mile wide, is 5.5 miles long, N and S, and 1.75 miles wide.

Pulau Degong (0°47'N., 103°32'E.), 4 miles N of Pulau Ungar and 1.33 miles E of the E end of Pulau Kundur, is about 3 miles long, N and S, and 1.5 miles wide.

Pulau Bilat (Belat) (0°49'N., 103°30'E.) lies close W of Pulau Degong and separated by a narrow channel. The coast of Pulau Bilat, from Pulau Degong, is fronted by several islands.

Pulau Buru (Boeroe) (0°53'N., 103°30'E.) is a low island about 4 miles long, N and S, crowned with high trees and having a few inhabitants. The E shore of the island is fronted by a shallow bank to distances of 0.5 to 1 mile.

Pulau Papan (0°53'N., 103°27'E.) lies W of Pulau Buru. Papan, 199m high, is located near the W side of Pulau Papan.

Pulau Parit (0°57'N., 103°27'E.) lies close N of Pulau Buru and forms the S side of Selat Gelam.

Pulau Pandan-besar (0°57'N., 103°29'E.), the S of two small islands lying about 1 mile N of Pulau Buru, is low and covered with trees about 30m high; Pulau Pandan-Ketjil lies close NE. A wreck lies 2.25 miles E of Pulau Pandan-Ketjil.

8.62 The Bulan Archipelago (1°04'N., 103°48'E.), of which **Pulau Kapaladjernih** (1°00'N., 103°47'E.) is the W most and largest, forms the E side of the N approach to Selat Durian and more particularly of **Selat Tjombol** (0°49'N., 103°53'E.).

Pulau Djangkat (0°53'N., 103°43'E.) lies about 5 miles W of the S end of Pulau Kapaladjernih, with numerous islets and reefs between and in the direction of **Tanjung Djernih** (1°02'N., 103°45'E.); numerous islets and reefs also lie between Pulau Djangkat and **Pulau Tjombol** (0°50'N., 103°52'E.). Some of these islands are inhabited.

Only the outermost islands and dangers which concern the ordinary navigator will be described.

Selat Sugi (Soegi Strait) (0°48'N., 103°44'E.) lies between Pulau Durian Besar, Pulau Sugibawah, and Pulau Pandjang on the W and Pulau Sugi on the E.

The W side of the strait is more encumbered by reefs and small islets than the E side, which during daylight is fairly easy of navigation. It is used by local steamers and by small craft plying between Singapore and the Indragiri River.

In Selat Sugi, the flood current runs S and the ebb current runs N; the current attains a velocity of 3 knots about 2 days after springs.

Pulau Sugi (Soegi) (0°50'N., 103°47'E.) is 10 miles long, NW and SE, and has an average width of about 3 miles. A range of hills extends through the island, the highest point being a saddle-shaped peak near its center, named **Bekaka** (0°49'42"N., 103°47'30"E.), which is 306m high. There are hills 137 to 183m high N and S.

The peak named **Sugi** (Soegi) (0°48'36"N., 103°48'12"E.), about 1.2 miles SE of Bekaka, is 190m high, and the hill within the S end of the island is 160m high.

On the W coast near **Tanjung Malang Tiang** (0°48'N., 103°46'E.) is a precipitous hill, 170m high. The E shore of the strait is formed by the W coast of Pulau Sugi; the S half is free of known dangers.

8.63 Tanjung Riouw (0°45'N., 103°49'E.), the S end of Pulau Sugi forms the E side of the S entrance of the strait, it is a bold point, the land rising within it to a height of 160m. Banks, with depths of 1.8 to 5.5m, extend 5.5 miles E of Tanjung Riouw, nearly connecting with East Bank and obstructing the S fairway of Selat Sulit.

Pulau Telumas (0°47'N., 103°46'E.), on the E side of Selat Sugi, lies about 3.2 miles WNW of Tanjung Riouw. It is about 0.5 mile long with a 79m high steep hill at its N end; the S end is low.

Pulau Tjonding-besar (0°47'N., 103°45'E.), 31m high, and Pulau Tjonding-kebil, two wooded islets, each surrounded by a drying reef, lie about 1 mile W of Pulau Telumas.

Tanjung Tello (0°51'N., 103°43'E.), located about 5 miles NW of Tanjung Malang Tiang, is rendered prominent by some trees on the coastal reef.

Pulau Djangka, a narrow islet, surrounded by a reef, lies about 0.2 mile N of **Tanjung Djangka** (0°52'24"N., 103°42'54"E.). Pulau Manis, also surrounded by a reef, lies about 0.7 mile W of Pulau Djangka.

On the W shore of Selat Sugi is **Pulau Pau** (Paoe) (0°47'30"N., 103°42'30"E.); to the S and E are **Pulau Sugi Darat** (0°47'18"N., 103°43'15"E.), 47m high; **Selerang** (0°47'30"N., 103°43'03"E.), and **Pulau Sugi Laut** (0°48'03"N., 103°43'18"E.).

Farther N are **Kelontjing** (0°49'18"N., 103°42'30"E.) and **Murei** (0°49'30"N., 103°41'48"E.), with **Pulau Jaga** (Djaga) (0°51'N., 103°42'E.) and **Pulau Pandjang** (0°51'N., 103°41'E.).

Selat Sulit (Soelit Strait) (0°50'N., 103°50'E.), between Pulau Sugi and **Pulau Tjombol** (0°50'N., 103°52'E.), is of little importance for navigation, as its S entrance is almost closed by sandbanks.

Pulau Passai (0°54'N., 103°45'E.), about 1.7 miles long, NW and SE, is separated from the N end of Pulau Sugi by a narrow channel.

Pulau Sepatu (0°55'N., 103°46'E.) lies about 1.2 miles NE of Pulau Passai.

Selat Tjombol (0°54'N., 103°52'E.) lies between Pulau Tjombol, Pulau Tjitlim, and Pulau Serandjau on the SW, and the S end of Pulau Bulan and the Luing islands on the NE. Its S approach, which is common to Selat Bulan, is obstructed by sandbanks; its N approach is obstructed by numerous reefs.

Though there is ample water, none of these dangers are buoyed, and the strait is not available for navigation except to vessels with local knowledge.

Pulau Tjombol (0°50'N., 103°52'E.) is 7.5 miles long, NW and SE, with its greatest breadth being a little over 3 miles. A range of hills, the highest point of which is 212m high, trends through the center of the island; it is also hilly near the coast, but the land between is flat. The island is thinly populated.

Pulau Tjitlim (0°47'N., 103°55'E.), SE of Pulau Tjombol and separated from it by a narrow channel, the shores of which are marshy on each side, is also hilly, reaching a height of 159 and 162m on its S and E sides, respectively.

The Serandjau group of islands consists of Pulau Serandjau, the largest, rising to a height of 108m, and Katip, Kelawa, Sebai, Resam, and Pandan.

8.64 Pulau Pisang (0°52'N., 103°54'E.) with above-water rocks close SE, lies about 0.7 mile off the NE side of Pulau Tjombol, and is the most prominent islet in the strait. It is spherical in shape, with two smaller islets lying off its E side.

Pulau Semangka (0°54'N., 103°50'E.) lies 1 mile off the N coast of Pulau Tjombol and 1.5 miles E of **Tanjung Kakong** (0°54'N., 103°48'E.), the N end of Pulau Tjombol.

Pulau Badas (0°55'N., 103°48'E.), 37m high, lies about 2 miles W of Pulau Semangka.

Pulau Duku (0°54'N., 103°48'E.), 48m high, lies about 0.5 mile W of Tanjung Kakong, with Terang lying between Pulau Duku and Pulau Badas.

Pulau Sepatu (0°55'N., 103°46'E.), a small islet situated near the E end of a drying reef, lies about 1 mile W of Pulau Duku.

Paloi (0°55'N., 103°49'E.) lies about 1 mile NE of Pulau Badas. Northwest of Paloi are Telan, **Pulau Telukbakau** (Telok Bakau) (0°57'N., 103°46'E.), Terong, and other islets forming the W side of Selat Tjombol. There are many reefs between them and Pulau Sepatu.

Pulau Bulan (Boelan) (0°59'N., 103°53'E.), forming the greater portion of the E side of Selat Tjombol, is generally low, except the SE part, which is hilly.

Bulan (0°58'30"N., 103°55'42"E.), a 224m high hill, is conspicuous.

Luing (Loeing) (0°52'N., 103°58'E.) a group of islands, on the SE side of the entrance to Selat Tjombol, consists of a number of very low islets, on the N of which there are some trees. Luing Laut is the S most of the islets.

Pulau Tepekong (0°53'N., 103°56'E.), 18m high, lies W of the Luing group, about 2 miles NE of Pulau Pisang. The fairway of Selat Tjombol lies between them, and has depths of 27m.

8.65 Pulau Djangkat (0°58'N., 103°42'E.), 32m high, lies WSW of Pulau Kapaladjernih, in the N entrance to Selat Durian; the island is steep-to.

Selat Bulan (Boelan Strait) (1°01'N., 103°56'E.), about 15 miles in length and separating the Bulan Archipelago from

Pulau Batam, is the shortest route to Singapore from ports in Berhala or from Selat Dempo, W side of approach to Selat Riau. It is available for light-draft vessels but from its intricate nature it seems improbable that it will come into general use, and therefore will not be described.

Selat Durian is slightly longer and is quite safe at all times, there being no risk of going aground. Springs rise at 3m, while neaps are reported to rise at 1.8 to 2.1m.

A submarine pipeline (water) crosses Selat Bulan between Pulau Sambu and Sekupang. This pipeline passes close NE of Pulau Mariam and close SW of two lighted shoal patches lying to the SE.

Tides—Currents.—In Selat Durian and Selat Tjombol, and the other minor straits the flood usually sets to the S and the ebb to the N, but this can not be relied upon, for frequently the currents run for 24 hours in the same direction.

The rippings met with in the straits in certain places might be alarming to a stranger; they appear to be caused by the uneven bottom and the resistance the currents meet with from the steep reefs and numerous small islands.

The flood current, setting NW through Selat Dempo runs through Selat Abang in a W direction, a portion being deflected to the S between **Pulau Pengelap** (0°30'N., 104°17'E.) and Pulau Dedap.

Westward of Selat Abang, the flood runs to the S between the islands near **Pulau Buaya** (0°11'N., 104°13'E.), and farther along the coast of Pulau Lingga in a S direction.

At the N entrance to **Selat Cempah** (0°09'N., 104°20'E.), NW of Karoti, the flood current setting to the W turns to the SSE in the strait.

The ebb current sets in an opposite direction in all the straits except where currents meet or separate; in the fairways the currents do not attain a velocity of more than 2 to 2.5 knots, but can run from 3 to 4 knots in the narrower channels.

The tidal currents in Selat Durian usually have a velocity of 2.5 knots at springs, but sometimes may have a velocity of 3 to 4 knots at springs. This irregularity appears to be produced by the prevailing winds in the N or S entrance of the straits, forcing the currents through in one direction for 12 or 18 hours at a time, although the rise and fall on the shore was regular.

Directions.—In Selat Merodong, according to the chart, **Kebat** (0°23'N., 104°18'E.) in range with the N extremity of **Dua Island** (0°24'N., 104°22'E.), bearing 258°, leads between the reefs off Daleh and those off the N end of Merodong.

In Selat Pengelap, navigation from either direction is easy. From the E steer in with **Batu Belayar** (0°25'N., 104°16'E.) well open S of the Alor Islands, bearing 222°, which leads about 0.5 mile W of **Selanga Islets** (0°30'N., 104°21'E.); pass

about 0.5 mile E of the Alor Islands, and the same distance or more N of Batu Belayar.

In Selat Abang, the N end of Pulau Pengelap bearing 075° and with **Udiep** (Oediep) (0°31'45"N., 104°18'30"E.) just shut in, leads in the fairway.

Pulau Karsogu (0°43'N., 103°39'E.), well open E of Pulau Sanglang-kecil bearing W of 329°, or **Djoria Peak** (0°43'N., 103°43'E.), on Pulau Durian Besar, W of 355°, leads E of the patches S of Pulau Sanglang Besar (Sanglang-besar); it is advisable for vessels not to steer W of that bearing, for uncharted shoal depths may exist in that area.

Djora Peak, bearing 000°, leads W of Tiga and **Carnbee Reef** (0°41'N., 103°44'E.), the peak on Pulau Sanglang Besar (Sanglang-besar), bearing W of 230°, leads SE of Tiga and Carnbee Reef.

8.66 Directions for Selat Bangka through Selat Berhala and Selat Durian to Singapore.—A vessel can proceed nearly direct from light to light from abreast and S of **Pulau Berhala** (0°52'S., 104°24'E.), passing about 3 miles W of the light on **Pulau Muci** (0°32'S., 104°02'E.); then steer about 353°, to pass the same distance E of **Rukan Selatan** (0°33'N., 103°46'E.) light, from where a course may be shaped to pass about 1 mile N of **Rukan Utara Light** (0°37'N., 103°46'E.).

Vessels may also pass W of Kepulauan Rukan. From N of Rukan Utara, steer to pass W of South Passage Island and Perasi Island, between them and **Pulau Pelangkat Light** (0°45'N., 103°35'E.); from then N between the lights on Melvill Reef and **Middelburg Reef** (0°51'N., 103°34'E.), and into Singapore Strait between Pulau Karimun and **Pulau Nipa Light** (1°09'N., 103°40'E.).

In Selat Sugi, **Pulau Telumas** (0°47'N., 103°46'E.) can be passed on either side, avoiding the reefs off its extremities; then keep along the Pulau Sugi side, giving a berth to the shoals N and S of Tanjung Tello, then passing between **Pulau Jaga** (0°51'N., 103°42'E.) and Pulau Manis or between Pulau Manis and **Djangka** (0°53'N., 103°43'E.).

In either of these fairways keep in mid-channel in order to avoid the reefs extending from the islands.

The channel W of **Tjonding Islets** (0°47'N., 103°45'E.) may be taken, if advisable, instead of passing E of Pulau Telumas.

The summit of Rukan Selatan in range with **Tanjung Batubelobang** (0°44'N., 103°45'E.), the E end of Pulau Durian Besar, bearing 173°, leads in the fairway and E of the reef E of **Sugi Laut** (0°48'N., 103°43'E.).

Then abreast this reef steer along the Pulau Sugi coast, as above.